UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

Note to Reader

Background: As part of its effort to involve the public in the implementation of the Food Quality Protection Act of 1996 (FQPA), which is designed to ensure that the United States continues to have the safest and most abundant food supply. EPA is undertaking an effort to open public dockets on the organophosphate pesticides. These dockets will make available to all interested parties documents that were developed as part of the U.S. Environmental Protection Agency's process for making reregistration eligibility decisions and tolerance reassessments consistent with FQPA. The dockets include preliminary health assessments and, where available, ecological risk assessments conducted by EPA, rebuttals or corrections to the risk assessments submitted by chemical registrants, and the Agency's response to the registrants' submissions.

The analyses contained in this docket are preliminary in nature and represent the information available to EPA at the time they were prepared. Additional information may have been submitted to EPA which has not yet been incorporated into these analyses, and registrants or others may be developing relevant information. It's common and appropriate that new information and analyses will be used to revise and refine the evaluations contained in these dockets to make them more comprehensive and realistic. The Agency cautions against premature conclusions based on these preliminary assessments and against any use of information contained in these documents out of their full context. Throughout this process, If unacceptable risks are identified, EPA will act to reduce or eliminate the risks.

There is a 60 day comment period in which the public and all interested parties are invited to submit comments on the information in this docket. Comments should directly relate to this organophosphate and to the information and issues available in the information docket. Once the comment period closes, EPA will review all comments and revise the risk assessments, as necessary.

These preliminary risk assessments represent an early stage in the process by which EPA is evaluating the regulatory requirements applicable to existing pesticides. Through this opportunity for notice and comment, the Agency hopes to advance the openness and scientific soundness underpinning its decisions. This process is designed to assure that America continues to enjoy the safest and most abundant food supply. Through implementation of EPA's tolerance reassessment program under the Food Quality Protection Act, the food supply will become even safer. Leading health experts recommend that all people eat a wide variety of foods, including at least five servings of fruits and vegetables a day.

Note: This sheet is provided to help the reader understand how refined and developed the pesticide file is as of the date prepared, what if any changes have occurred recently, and what new information, if any, is expected to be included in the analysis before decisions are made. **It is not meant to be a summary of all current information regarding the chemical.** Rather, the sheet provides some context to better understand the substantive material in the docket (RED chapters, registrant rebuttals, Agency responses to rebuttals, etc.) for this pesticide.

Further, in some cases, differences may be noted between the RED chapters and the Agency's comprehensive reports on the hazard identification information and safety factors for all organophosphates. In these cases, information in the comprehensive reports is the most current and will, barring the submission of more data that the Agency finds useful, be used in the risk assessments.

Jack E. Housenger, Acting Director
Special Review and Reregistration Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

April 14, 1999

MEMORANDUM

SUBJECT: **Residue Chemistry Chapter for the Malathion Reregistration Eligibility Decision (RED) Document**.
DP Barcode No.: D239453
Chemical No.: 057701
Reregistration Case No.: 0248

FROM: William O. Smith, Chemist
Chemistry and Exposure Branch I
Health Effects Division [7509C]

THROUGH: F. B. Suhre, Branch Senior Scientist
Chemistry and Exposure Branch I
Health Effects Division [7509C]

TO: Paula Deschamp
Reregistration Branch II
Health Effects Division [7509C]

Attached is the Residue Chemistry Chapter for the Malathion RED Document. This document was prepared by Dynamac Corporation under the supervision of HED and revised by the Chemistry & Exposure Branch to reflect Agency policies. A dietary exposure assessment for the RED will follow as a separate memorandum.

Attachment: Residue Chemistry Chapter for the Malathion RED Document.

cc: P. Poli (SRRD), WSmith (CEB1), Malathion Reg. Std. File.
7509C:CEB1:WSmith:Rm 810C:CM2: 703-305-5353: 4/14/99.

MALATHION

REREGISTRATION ELIGIBILITY DECISION

RESIDUE CHEMISTRY CONSIDERATIONS

Chemical No. 057701; Case 0248

TABLE OF CONTENTS page

MALATHION

REREGISTRATION ELIGIBILITY DECISION

RESIDUE CHEMISTRY CONSIDERATIONS

Chemical No. 057701; Case 0248

INTRODUCTION

Malathion [*O,O*-dimethyl dithiophosphate of diethyl mercaptosuccinate] is a non-systemic wide spectrum insecticide registered for use on a variety of field, fruit, and vegetable crops. It is also registered for direct use on poultry and poultry houses, livestock animals and livestock premises, stored food/feed items, food-handling establishments, food-processing plants, and for the treatment of humans, pet commercial establishments, ornamental plants, forest trees, and aquatic non-food sites.

The basic producer of malathion is Cheminova Agro A/S. Cheminova's end-use products are sold under the trade names Cythion® and Fyfanon®. The Cheminova malathion formulation classes registered for food/feed uses include the emulsifiable concentrate (EC), wettable powder (WP), liquid ready-to-use (RTU), and Dust forumlations. These formulations are typically applied as foliar treatments using ground or aerial equipment on food/feed crops, as residual spray treatments on stored raw agricultural and processed commodities and livestock premises, as aquatic treatments on aquatic areas, as crack and crevice treatments on food-handling establishments, and as direct animal treatments on poultry and livestock animals.

REGULATORY BACKGROUND

Malathion was the subject of a Reregistration Standard Guidance Document dated 2/88; the Residue Chemistry Science Chapter of the Guidance Document was dated 7/31/87. The Guidance Document summarized the status of residue chemistry data requirements with respect to the reregistration of malathion. No Reregistration Standard Update was issued for malathion.

Tolerances have been established for residues of malathion *per se* in/on food/feed commodities [40 CFR §180.111, §185.3850, §185.7000, and §186.3850] and meat, milk poultry and eggs [40 CFR §180.111].

The Agency has updated the list of raw agricultural and processed commodities and feedstuffs derived from crops (Table 1, OPPTS 860.1000). As a result of changes to Table 1, additional malathion residue data are now required for some commodities; these data requirements have been incorporated into this document. These new data requirements will be imposed at the issuance of the Malathion RED but should not impinge on the reregistration eligibility decisions

for malathion. The need for revisions to dietary exposure/risk assessments will be determined upon receipt of the required residue chemistry data.

SUMMARY OF SCIENCE FINDINGS

GLN 860.1200: Directions for Use

According to a REFS search, conducted on 1/19/99, there are 214 active end-use products (EPs) containing the active ingredient malathion which are registered for use on nearly 200 food/feed crops.

The basic producer of malathion is Cheminova Agro A/S, and the majority of residue chemistry data in support of reregistration have been submitted by Cheminova. Some uses are also being supported by the Interregional Research Project No. 4 (IR-4), Platte Chemical Company, and Gowan Chemical Company. There are currently eleven Cheminova malathion EPs registered under FIFRA Section 3 for use on food/feed crops. These EPs, including the associated Special Local Need (SLN) registrations under FIFRA Section 24 (c), are listed in Table A1.

A comprehensive summary of malathion food/feed use patterns, based on the product labels registered to Cheminova Agro A/S, is presented in Table A2. **NOTE: This summary was compiled in 1997 and has not been updated to reflect all the products that are currently being supported by the registrant.** A tabular summary of the residue chemistry science assessments for reregistration of malathion is presented in Table B. The status of reregistration requirements for each guideline topic listed in Table B is based on the use patterns registered by the basic producer.

Table A1. Malathion EPs with Food/Feed Uses Registered to Cheminova Agro A/S.

EPA Reg. No.	Formulation	Product Name
67760-1	5 lb/gal EC	Fyfanon® 5 EC
67760-2	2 lb/gal malathion 2 lb/gal methoxychlor	Malathion-Methoxychlor Spray
67760-3	6% Dust	Fyfanon® 6% Malathion Grain Protector
67760-4	8 lb/gal EC	Fyfanon® 8 EC Insecticide
67760-15	1% Dust	Fyfanon® Stored Grain Dust 1%
67760-16	25% WP	Fyfanon® 25 WP
67760-26	6% Dust	Fyfanon® 6% Dust
67760-34 [formerly 4787-8] [1]	9.79 lb/gal RTU	Fyfanon® ULV
67760-40 [formerly 4787-20]	5 lb/gal EC	Cythion® Insecticide
67760-41 [formerly 4787-21]	4.1 lb/gal RTU	Cythion® Insecticide RTU
67760-35 [formerly 4787-25] [2]	9.79 lb/gal RTU	Malathion ULV

[1] Including SLN No. FL950007.
[2] Including SLN No. FL880001.

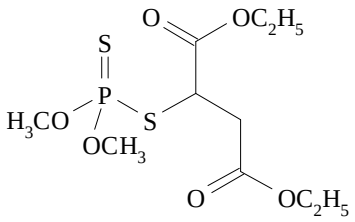
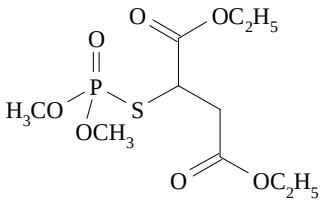
The majority of field trial data submitted reflect use of the EC (using conventional ground/aerial equipment) and 9.79 lb/gal RTU (using ULV ground/aerial equipment) formulations with limited submissions reflecting WP and Dust formulations. If any interested party wishes to support additional malathion formulation classes, then residue data reflecting other formulations are required. The registrant is required to amend its product labels to comply with PR Notice 93-2 (*Waiver of Crop Field Trial Data for Aerial Applications*, 2/11/93). Label amendments are also required to incorporate the parameters of use patterns reflected in the submitted field trials. Details of the required label amendments are presented in the respective endnote for GLN 860.1500 (Crop Field Trials) in Table B.

For the purpose of generating this Residue Chemistry Science Chapter, the Chemistry Branch examined the registered food/feed use patterns of the basic producer and reevaluated the available residue chemistry database for adequacy in supporting these use patterns. When end-use product DCIs are developed (e.g., at issuance of the RED), RD should require that all end-use product labels (e.g., MAI labels, SLNs, and products subject to the generic data exemption) be amended such that they are consistent with the basic producer labels.

GLN 860.1300: Nature of the Residue - Plants

The reregistration requirements for plant metabolism are fulfilled. Acceptable studies depicting the qualitative nature of the residue in alfalfa, lettuce, cotton, and wheat have been submitted and evaluated. Based on the available plant metabolism data, the HED Metabolism Committee has determined (R. Perfetti, 7/15/92) that the malathion residues of concern that need to be regulated for plants consist of malathion and its metabolite malaoxon; see Figure 1 for chemical structures and full chemical names. The tolerance expression (currently expressed in terms of malathion *per se*) should be revised to include malathion and malaoxon.

Figure 1. Chemical Names and Structures of Malathion Residues of Concern in Plant Commodities.

Common Name Chemical Structure Chemical Name	**Common Name** Chemical Structure Chemical Name
Malathion  *O,O*-dimethyl dithiophosphate of diethyl mercaptosuccinate	**Malaoxon; Maloxon; Malathion Oxygen Analog**  *O,O*-dimethyl thiophosphate of diethyl mercaptosuccinate

GLN 860.1300: Nature of the Residue - Animals

The reregistration requirements for animal metabolism are fulfilled. Acceptable ruminant and poultry metabolism studies have been submitted and evaluated. Since neither malathion nor malaoxon were observed in eggs, milk, and animal tissues, there is no need for tolerances in these commodities based on dietary exposure to malathion. The current malathion tolerances for animal commodities were established based on use pattern involving direct animal treatments which would, in all probability, result in significant malathion residues of concern in eggs, milk, and animal tissues. Therefore, if the direct animal treatment uses of malathion to poultry and livestock animals are canceled, then the established tolerances for residues of malathion *per se* in eggs, milk, and animal tissues may be revoked (Greybeard Committee decision on Malathion, 10/19/94). If the registrant(s) wishes to support use of malathion involving direct livestock treatment, then appropriate dermal metabolism and magnitude of the residue studies are required.

GLN 860.1340: Residue Analytical Methods

Methods for determination of residues in/on plant commodities: The registrant has proposed American Cyanamid Method M-1866, a GLC method with flame photometric detection (FPD) operating in the phosphorus mode, for enforcement purposes. Method-1866 determines residues of malathion and malaoxon in/on plant commodities and has a limit of quantitation (LOQ) of 0.05 ppm for each compound. The method has undergone a successful independent laboratory validation, and acceptable radiovalidation data using samples from an alfalfa metabolism study have also been submitted and evaluated. Samples of raw agricultural and processed commodities from recent field trials and processing studies were analyzed by Method-1866 or its modifications. Pending a successful tolerance method validation to be conducted by EPA's Beltsville Laboratory, American Cyanamid Method M-1866 will be approved for enforcement purposes.

Presently, the Pesticide Analytical Manual (PAM) Volume II lists a TLC method, a GLC method with KCl thermionic detection, and a spectrophotometric method as Methods I, II, and III, respectively, for the enforcement of malathion tolerances (expressed as malathion *per se*) in/on plant commodities.

Methods for determination of residues in animal commodities: If the direct animal treatment uses of malathion to poultry and livestock animals are canceled, then no additional analytical methods are required for reregistration. However, if the registrant(s) wishes to support use of malathion involving direct livestock treatment, then residue analytical method(s) capable of determining malathion residues of concern in eggs, milk, and animal tissues resulting from direct animal treatments are required.

PAM Volume II lists a spectrophotometric method and a GLC method as Methods A and B, respectively, for the enforcement of malathion tolerances (expressed as malathion *per se*) in animal commodities.

GLN 860.1360: Multiresidue Methods

The reregistration requirements for multiresidue method testing for residues of malathion and malaoxon are satisfied. The 2/97 FDA PESTDATA database (PAM Volume I, Appendix I) indicates that malathion is completely recovered (>80%) using multiresidue methods PAM Volume I Sections 302 (Luke method; Protocol D), 303 (Mills, Onley, and Gaither method; Protocol E), and 304 (Mills method for fatty food). Malaoxon is completely recovered (>80%) using multiresidue method PAM Volume I Sections 302 (Luke method; Protocol D) but is not recovered using method Sections 303 (Mills, Onley, and Gaither method; Protocol E), and 304 (Mills method for fatty food).

GLN 860.1380: Storage Stability Data

Raw agricultural and processed commodities: The reregistration requirements for storage stability data for raw agricultural and processed commodities are fulfilled. The available storage stability data indicate that residues of malathion and malaoxon are relatively stable under frozen storage conditions (-5 C) for at least 12 months in/on: cottonseed and cottonseed meal, hulls, and bleached and deodorized oils; wheat straw, bran, flour, middlings, and shorts; leaf lettuce; potato tubers; tomatoes and tomato catsup, juice, and dried pomace. The only significant decline in residue was observed in/on wheat grain and forage when compared to day-0 recovery values; residues of malathion *per se* declined ~33-36% in/on wheat grain and ~15-17% in/on wheat forage following 12 months of storage. CBRS will take this residue decline into consideration during the tolerance reassessment of cereal grains. The matrices chosen in the storage stability study sufficiently represent all types of raw agricultural and processed commodities for which malathion is registered. No additional storage stability data are required for raw agricultural and processed commodities since most samples collected from recent studies pertaining to magnitude of the residue in plants were stored for less than one year. Should additional studies pertaining to magnitude of the residue in/on raw and processed foods required in the future, CBRS recommends that samples be analyzed within the storage interval (12 months) residues were found to be stable.

Animal commodities: If the direct animal treatment uses of malathion to poultry and livestock animals are canceled, then no additional storage stability data for animal commodities are required for the purpose of reregistration. However, if the registrant(s) wishes to support use of malathion involving direct livestock treatment, then data depicting the storage stability of malathion residues of concern in eggs, milk, and animal tissues are required.

GLN 860.1500: Crop Field Trials

The reregistration requirements for magnitude of the residue in/on the following raw agricultural commodities (RACs) resulting from preharvest uses will be considered fulfilled pending label revisions and/or tolerance adjustments: alfalfa forage and hay; apricot; asparagus; avocado; barley grain and straw; bean (dry and succulent); beet (garden) roots and tops; Birdsfoot trefoil forage and hay; blackberry; blueberry; boysenberry; broccoli; Brussels sprouts; cabbage; carrot; cauliflower; chayote fruit and roots; cherry; chestnut; clover forage and hay; collards; corn (field) grain, aspirated grain fractions, forage, and stover; corn (sweet) K + CWHR and forage; cottonseed; cucumber; currant; dandelion; dewberry; eggplant; endive; fig; flax seed; garlic; gooseberry; grapefruit; grape; grass forage and hay; guava; hops (dried); horseradish; kale; kohlrabi; kumquat; leek; lemon; lespedeza forage and hay; lettuce (head and leaf); lime; loganberry; lupin seed; macadamia nut; mango; melon; mushroom; mustard greens; nectarine; oat grain, forage, and straw; okra; onion (dry bulb and green); orange; papaya; parsley; parsnip; passion fruit; pea (succulent); peach; pear; pecan; pepper; peppermint; pineapple; potato; pumpkin; radish roots and tops; raspberry; rice grain and straw; rice (wild) grain; rutabaga; rye

grain, forage, and straw; salsify roots and tops; shallot; sorghum grain and aspirated grain fractions; spearmint; spinach; squash; strawberries; sweet potato; Swiss chard; tangerine; tomato; turnip roots and tops; vetch forage and hay; walnut; watercress; wheat grain, aspirated grain fractions, forage, and straw. Overall, adequate field trial data depicting malathion residues of concern following treatments according to the maximum registered/proposed use patterns of representative formulations that are being supported have been submitted for the RACs listed above, or have been translated where appropriate. Label revisions are required for some crops in order to reflect current Agency policies and/or to reflect the parameters of use patterns for which field trial data are available. Details of the required label amendments are presented in the endnotes for GLN 860.1200 (Directions for Use) and respective crop sections for GLN 860.1500 (Crop Field Trials) of Table B. Refer to "Tolerance Reassessment Summary" section for recommendations with respect to established tolerance levels.

The reregistration requirements for magnitude of the residue in/on the following RACs resulting from preharvest uses have not been fulfilled: apple; barley hay; celery; corn (sweet) stover; cotton gin byproducts; date (data under review); oat hay, quince (will rely on apple data); sorghum forage and stover; and wheat hay.

No registrants have committed to support malathion uses on the following crops: almonds; cowpea; cranberry; filbert; lentil; pea (field); peanut; plum; safflower; soybean; sugar beets; sunflower; and tobacco. Unless Cheminova or other registrants submit supporting data, the above crops should be deleted from all malathion end-use product labels and the established tolerances for the respective RACs should be revoked.

No registrants have also committed to support malathion uses on any greenhouse-grown crop. Therefore, the registered greenhouse use patterns for cucumber, endive, lettuce, radish, tomato, and watercress should be deleted from all malathion end-use product labels. The reassessment of tolerances for the above RACs will be conducted with the assumption that only field-grown cucumber, endive, lettuce, radish, tomato, and watercress will be supported for reregistration.

The reregistration requirements for magnitude of the residue in/on the following RACs resulting from postharvest uses will be considered fulfilled pending label revisions and/or tolerance adjustments: barley grain; corn grain and aspirated grain fractions; oat grain; rye grain; sorghum grain and aspirated grain fractions; and wheat grain and aspirated grain fractions.

Postharvest uses related to the following commodities resulting from stored product treatment are not being supported for reregistration: cattle feed concentrate blocks; citrus pulp; and raisin. Unless Cheminova or other registrants submit supporting data, the above uses should be deleted from all malathion end-use product labels and the established tolerances for the respective stored commodities should be revoked.

GLN 860.1520: Processed Food/Feed

The reregistration requirements for magnitude of the residue in the processed commodities of the following crops have been fulfilled: apple; corn (reflecting preharvest and postharvest treatments); cottonseed; fig; grape (reflecting preharvest treatment); mint; orange; pineapple; potato; rice (reflecting preharvest treatment) sorghum (reflecting preharvest and postharvest treatments); tomato; wheat (reflecting preharvest treatment). Refer to "Tolerance Reassessment Summary" section for recommendations with respect to the need for tolerances as a result of concentration of residues of malathion and malaoxon in processed commodities.

The reregistration requirements for magnitude of the residue in the processed commodities of the following crops have not been fulfilled, and appropriate processing data are required: flax; and wheat (reflecting postharvest treatment). Additionally, processing data for peanut, plum, rice (reflecting postharvest treatment), safflower, sugar beet, soybean, and sunflower are required should any registrant elect to support uses of malathion on these crops. The previously requested date processing data are no longer required because current Residue Chemistry Guidlines (Table 1, OPPTS 860.1000) do not list any processed food/feed items associated with date.

GLN 860.1480: Meat, Milk, Poultry, Eggs

The reregistration requirements for magnitude of the residue in meat, milk, poultry, and eggs will be considered fulfilled if the direct animal treatment uses of malathion to poultry and livestock animals are canceled and the established tolerances for residues of malathion *per se* in eggs, milk, and animal tissues are revoked. Based on ruminant and poultry metabolism data at exaggerated feeding rates, HED has determined that no tolerances are required for meat, milk, poultry and eggs (Greybeard Committee decision on Malathion, 10/19/94).

GLN 860.1400: Water, Fish, and Irrigated Crops

Malathion remains registered for use on aquatic areas (including intermittently flooded areas, stagnant water, and temporary rain pools). The nature and magnitude of residues of malathion in drinking and irrigated water resulting from aquatic uses have not been delineated. Therefore, the data requirements imposed in the Malathion Reregistration Standard for these guideline topics remain outstanding. In lieu of the required residue data, the registrant(s) may modify malathion use to allow broadcast use only over intermittently flooded areas, and that applications may not be made around bodies of water where fish or shellfish are grown and/or harvested commercially.

GLN 860.1460: Food Handling

Malathion uses in food/feed handling establishments are not being supported for reregistration. If no interested party wishes to support these uses then all related indoor uses must be deleted from malathion end-use products. Otherwise studies must be conducted to determine residues in food or feed resulting from treatment of food/feed handling establishments with malathion.

GLN 860.1850 and 860.1900: Confined/Field Accumulation in Rotational Crops

The nature of the residue in confined rotational crops is understood, and no additional confined rotational crop data are required for the purpose of reregistration. Malaoxon was not detected in/on any fractions or extracts collected from samples representing 30-day plant back interval (PBI). Malathion was identified in the organosoluble fractions of immature lettuce, immature turnips, and wheat forage from the same PBI. Because malathion was identified in 30-PBI rotational crops and quantified at levels greater than 0.01 ppm, the registrant(s) was required to conduct limited field rotational crop studies. Rotational crop restrictions are needed on malathion end-use product labels. The appropriate PBIs will be determined pending submission of the required field rotational crop studies.

Table A2. Food/Feed Use Patterns Registered for Malathion (Case 0248).[1]

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
FOOD/FEED CROPS						
Alfalfa						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.56 lb/A	Not specified (NS)	NS	0	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A. Apply to alfalfa in bloom only in the evening or early morning when bees are not working in the field or are not hanging on outside of hives.
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.15-1.22 lb/A	NS	NS	0-day for rate up to 0.61 lb/A 5-day for rate up to 1.22 lb/A	Applications should be made when pests first appear. An unspecified number of repeat application may be made as needed. Applications to alfalfa in bloom or to alfalfa grown for seed are prohibited.
Almond						
Foliar Ground	5 lb/gal EC [4787-20]	0.63-1.25 lb/100 gal or 1.25-2.5 lb/A	NS	8 lb/A	0	Application rates are based on a standard dilution rate of 200 (ground) gal of water/A dilute spray for mature trees. Application should be made during the petal fall period or during the period appropriate for spraying larvae of the May brood.
Anise and Celery						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94 lb/A	NS	NS	7	Application should be made to fresh leaves and stalks only using a minimum of 30 (ground) or 5 (aerial) gal of water/A. Do not use on crops grown for seed and oil.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Apple						
Foliar Ground	5 lb/gal EC [4787-20]	0.63-1.25 lb/100 gal or 2.5-5.0 lb/A	NS	NS	3	Application rates are based on a standard dilution rate of 400 (ground) gal of water/A dilute spray for mature trees pruned 20-22 feet high in rows 40 feet apart.
Dormant/delayed dormant Ground		0.63 lb/100 gal + 1 gal of superior oil	NS	NS	NS	Full coverage application should be made during dormant or delayed dormant stages.
Apricot						
Foliar Ground	5 lb/gal EC [4787-20]	0.94-1.25 lb/100 gal or 2.8-3.75 lb/A	NS	NS	7	Application rates are based on a standard dilution rate of 300 (ground) gal of water/A dilute spray for mature trees.
Asparagus						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/A	NS	NS	1	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Avocado						
Foliar Ground	5 lb/gal EC [4787-20]	0.94 lb/100 gal or 4.69 lb/A	NS	NS	7	Application rates are based on a standard dilution rate of 500 (ground) gal of water/A dilute spray for mature trees.
Barley						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63-1.25 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.15-0.61 lb/A	NS	NS	7	Applications should be made when pests first appear and repeated as needed.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Bean (Including Green Beans, Lima Beans, Navy Beans, Red Kidney Beans, Snap Beans, Wax Beans, Cowpeas, and Blackeyed Peas)						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/A	NS	NS	1	Application should be made using a minimum of 30 (ground), 5 (aerial), or 10 (aerial in CA and Northwest) gal of water/A.
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.15-0.61 lb/A	NS	NS	1	Applications should be made when pests first appear and repeated as needed.
Beet (Garden)						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A. Do not apply within 7 days if tops are to be used for food or feed.
Beet, Sugar (See "Sugar Beet")						
Blackberry, Boysenberry, Dewberry, Loganberry, and Raspberry						
Foliar Ground	5 lb/gal EC [4787-20]	0.94 lb/100 gal or 1.88 lb/A	NS	NS	1	Application rates are based on a standard dilution rate of 200 (ground) gal of water/A dilute spray for berries.
Blueberry						
Foliar Ground	5 lb/gal EC [4787-20]	0.63 lb/100 gal + 1.5 qts of Staley's Sauce Base No. 7/A	NS	NS	8 hours	Use limited to the Northeast. Application rates are based on a standard dilution rate of 100 (ground) gal of water/A dilute spray for berries.
		0.47-0.63 lb/100 gal or 0.94-1.25 lb/A	4	NS	1	Initial application should be made at egg hatch and repeated at 4- or 5-day intervals. Application rates are based on a standard dilution rate of 200 (ground) gal of water/A dilute spray for berries.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Blueberry (continued)						
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.77 lb/A	NS	NS	0	Applications should be made when pests first appear and repeated as needed.
Boysenberry (See "Blackberry" cluster)						
Broccoli						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63-1.25 lb/A	NS	NS	3	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Brussels Sprouts						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63-1.25 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Cabbage						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63-1.25 lb/A	NS	NS	7	Initial application should be made when insects first appear or when true leaves first develop (in southern states) using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Carrot						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.56 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Cauliflower						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63-2.5 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Celery (See "Anise" cluster)						
Cherry						
Foliar Ground	5 lb/gal EC [4787-20]	0.63-0.94 lb/100 gal or 2.5-3.75 lb/A	NS	8.0 lb/A	3	Application rates are based on a standard dilution rate of 400 (ground) gal of water/A dilute spray for mature trees. Injury may occur on certain varieties of sweet cherries, particularly in the Northwest.
ULV foliar Aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.92-1.22 lb/A	NS	NS	1	Applications should be made when pests first appear and repeated as needed.
Citrus Fruits (Including Grapefruit, Kumquat, Lemon, Lime, Orange, Tangelo, and Tangerine)						
Foliar Ground	5 lb/gal EC [4787-20]	0.63-1.25 lb/100 gal	NS	NS	7	Application rates are based on a standard dilution rate of 500 (ground) gal of water/A dilute spray for mature trees. Do not apply when trees are in bloom.
		1.56 lb/A	NS	NS	7	Application rates are based on a dilution rate of 200 gal of water/A. Do not apply when trees are in bloom.
Foliar Aerial	9.79 lb/gal RTU [FL880001] [FL950007]	0.18 lb + 9.6 oz protein hydrolysate/A	NS	NS	NS	Use limited to FL. Application should be made to citrus groves and adjacent non-crop lands when citrus foliage is dry and repeated at 7- to 10-day retreatment intervals.
Clover						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/A	NS	NS	0	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A. Do not apply to clover in bloom.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Clover (continued)						
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8]	0.15-0.92 lb/A	NS	NS	0	Applications should be made when pests first appear and repeated as needed. Application to clover in bloom is prohibited.
Collard						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63-1.25 lb/A	NS	NS	7	Initial application should be made when insects first appear or when true leaves first develop (in southern states) using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Corn, Field						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/A	5 (Implied)	6.25 lb/A (Implied)	5	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A. For the control of corn earworm and sap beetles, begin treatments when 10% of the ears show silk. Repeat applications at 3- to 5-day intervals until 4-5 applications have been made. Injury may occur in the whorl or to the silks following applications.
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.15-0.61 lb/A	NS	NS	5	Applications should be made when pests first appear and repeated as needed.
Corn, Sweet						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	1.25 lb/A	NS	NS	5	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A. Injury may occur in the whorl or to the silks following applications.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Cotton						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.31-2.5 lb/A	NS	NS	0	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A. Consult local agricultural authorities for exact time of application.
ULV foliar Ground/aerial	4.1 lb/gal RTU [4787-21] 9.79 lb/gal RTU [4787-8] [4787-25]	0.29-1.22 lb/A	NS	NS	0	Applications should be made using a minimum of 5 (ground) or 1 (aerial) gal of water/A beginning when pests first appear and repeated as needed. Application of the 9.79 lb/gal RTU (EPA Reg. No. 4787-25) formulation may be made undiluted or diluted in once-refined cottonseed or vegetable oil to make a minimum of 1 qt of finished spray/A.
Cucumber						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.88 lb/A	NS	NS	1	Application should be made only when plants are dry using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Foliar Commercial greenhouse Ground		0.94-1.25 lb/100 gal	NS	NS	1	Application should be made only when plants are dry.
Currants and Gooseberry						
Foliar Ground	5 lb/gal EC [4787-20]	0.63-0.94 lb/100 gal or 1.25-1.88 lb/A	NS	NS	3	Application rates are based on a standard dilution rate of 200 (ground) gal of water/A dilute spray for berries.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Dandelion, Parsley, Parsnip, Swiss Chard, and Watercress						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/A	NS	NS	7 days for dandelion, parsnip, Swiss chard, and watercress 21 days for parsley	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Dewberry (See "Blackberry" cluster)						
Eggplant						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63-1.88 lb/A	NS	NS	3	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Endive						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Foliar Commercial greenhouse Ground		0.94-1.25 lb/100 gal	NS	NS	7	Thorough application should be made to plants grown in commercial greenhouses using ground spray equipment.
Fig						
Foliar Ground	5 lb/gal EC [4787-20]	2.5 lb/A + 1-2 gal of unsulfured molasses	NS	NS	3	Application should be made when pests first appear.
Filbert						
Foliar Ground	5 lb/gal EC [4787-20]	0.63 lb/100 gal or 2.5 lb/A	NS	3.0 lb/A	3	Application rates are based on a standard dilution rate of 400 (ground) gal of water/A dilute spray for filbert trees.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Flax						
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-25]	0.61 lb/A	1	0.61 lb/A	45	The grazing or feeding of forage is prohibited.
Garlic and Shallot						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/A	NS	NS	3	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Gooseberry (See "Currants" cluster)						
Grapefruit (See "Citrus Fruits" cluster)						
Grape						
Foliar Ground	5 lb/gal EC [4787-20]	0.94 lb/100 gal or 0.94-1.88 lb/A	NS	NS	3	Application rates are based on a standard dilution rate of 200 (ground) gal of water/A dilute spray. Make full coverage applications when newly hatched nymphs are migrating over vines, usually shortly after bloom. Injury may occur on grapes of Almeria, Cardinal, Italia, and Ribier varieties when spray are applied after clusters have appeared.
Overwintering nursery stock Root dip Ground		1.88 lb/100 gal	NS	NS	NS	Application is to be made by removing excess soil from the roots and dipping into solution for 5 minutes.
Grass (Pasture and Rangeland Grasses Including Barnyardgrass, Canarygrass, Fescue, Orchardgrass, Red Top, Timothy and Yellow Foxtail)						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63-1.25 lb/A or 0.94 lb/A + 1 gal of diesel fuel oil	NS	NS	0	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Grass (continued)						
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.15-0.92 lb/A	NS	NS	0	Applications should be made when pests first appear and repeated as needed.
Hops						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63 lb/A	NS	NS	10	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Horseradish and Radish						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Kale						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63-1.25 lb/A	NS	NS	7	Initial application should be made when insects first appear or when true leaves first develop (in southern states) using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Kohlrabi						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63-1.25 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Kumquat (See "Citrus Fruits" cluster)						
Leek						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.88 lb/A	NS	NS	3	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Lemon (See "Citrus Fruits" cluster)						
Lentil						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94 lb/A	NS	NS	3	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Lettuce						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	1.25-1.88 lb/A	NS	NS	7 (head lettuce) 14 (leaf lettuce)	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Foliar Commercial greenhouse Ground		0.94-1.25 lb/100 gal	NS	NS	7 (head lettuce) 14 (leaf lettuce)	Thorough application should be made to plants grown in commercial greenhouses using ground spray equipment.
Lime (See "Citrus Fruits" cluster)						
Loganberry (See "Blackberry" cluster)						
Macadamia Nuts						
Foliar Ground	5 lb/gal EC [4787-20]	0.94 lb/100 gal	NS	15 lb/A	0	Application should be made when insects begin to feed on the nuts. An unspecified number of repeat applications may be made as needed.
Melons (Including Cantaloupe, Casaba, Crenshaw, Honeydew Melons, Honey Balls, Muskmelons, Persian Melons and hybrids of these, Watermelons and their hybrids)						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.88 lb/A	NS	NS	1	Application should be made only when plants are dry using a minimum of 30 (ground) or 5 (aerial) gal of water/A.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Mushroom						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	1.56 lb/130 gal water or 2 tbls product/3 gal water/1,000 sq. ft of bed	NS	NS	1	Applications should be made as soon after picking as possible. An unspecified number of repeat applications may be made at 3.5-day interval.
Mustard						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/A	NS	NS	7	Initial application should be made when insects first appear or when true leaves first develop (in southern states) using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Nectarine						
Foliar Ground	5 lb/gal EC [4787-20]	0.63-1.25 lb/100 gal or 1.88-3.75 lb/A	NS	NS	7	Application rates are based on a standard dilution rate of 300 (ground) gal of water/A dilute spray for mature trees.
Oats						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63-1.25 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.15-0.61 lb/A	NS	NS	7	Applications should be made when pests first appear and repeated as needed.
Okra						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/A	NS	NS	1	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Onion						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.56 lb/A	NS	NS	3	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Orange (See "Citrus Fruits" cluster)						
Papaya						
Foliar Ground	5 lb/gal EC [4787-20]	0.94-1.25 lb/100 gal	NS	NS	0	Application should be made when pests first appear.
Parsley (See "Dandelion" cluster)						
Parsnip (See "Dandelion" cluster)						
Pastures (See "Grass" cluster)						
Peach						
Foliar Ground	5 lb/gal EC [4787-20]	0.63-1.25 lb/100 gal or 1.88-3.75 lb/A	NS	9.0 lb/A	7	Application rates are based on a standard dilution rate of 300 (ground) gal of water/A dilute spray for mature trees.
Peanut						
Foliar Ground	5 lb/gal EC [4787-20]	0.94 lb/A	NS	NS	0	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Pear						
Foliar Ground	5 lb/gal EC [4787-20]	0.63-1.25 lb/100 gal or 1.88-3.75 lb/A	NS	NS	1	Application rates are based on a standard dilution rate of 300 (ground) gal of water/A dilute spray for mature trees. Injury may occur under certain conditions in the Northeast on Bosc pears.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Pea						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.78-2.5 lb/A	NS	NS	7 (if vines are to be fed to livestock animals) or 3 (if vines are not to be fed)	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.61 lb/A	NS	NS	14	Use limited to the Northwest. Applications should be made when pests first appear and repeated as needed.
Pecan						
Foliar Ground	5 lb/gal EC [4787-20]	0.78-1.25 lb/100 gal or 3.90-6.25 lb/A	NS	NS	0	Application rates are based on a standard dilution rate of 500 (ground) gal of water/A dilute spray for mature trees 25-35 feet high. Apply when buds begin to develop or after first generation of eggs begin to hatch. An unspecified number of repeat applications may be made as needed.
Peppermint and Spearmint						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Pepper						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63-1.56 lb/A	NS	NS	3	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Pineapple						
Foliar Ground	5 lb/gal EC [4787-20]	0.63 lb/100 gal or 5.0 lb/A	NS	NS	7	Application should be made when insect pests first appear.
Plum and Prune						
Foliar Ground	5 lb/gal EC [4787-20]	0.63-0.94 lb/100 gal or 1.88 lb/A	4 (Implied)	7.52 lb/A (Implied)	3	Application rates are based on a standard dilution rate of 300 (ground) gal of water/A dilute spray for mature trees. Make full coverage applications to trunks and scaffold limbs 4 times at 21-day intervals beginning with emergence in June. In GA, two applications each 4 weeks apart for first (April and May) and second (August and September) broods should be made.
Potato						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.56 lb/A	NS	NS	0	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Prune (See "Plum" cluster)						
Pumpkin						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.88 lb/A	NS	NS	3	Application should be made only when plants are dry using a minimum of 30 (ground) or 5 (aerial) gal of water/A.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Quince						
Foliar Ground	5 lb/gal EC [4787-20]	0.63-1.25 lb/100 gal or 1.88-3.75 lb/A	NS	NS	3	Application rates are based on a standard dilution rate of 300 (ground) gal of water/A dilute spray for mature trees. Apply when pests first appear or when crawlers are present (i.e., about first or second cover and last half of July).
Radish						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Foliar Commercial greenhouse Ground		0.94-1.25 lb/100 gal	NS	NS	7	Thorough application should be made to plants grown in commercial greenhouses using ground spray equipment.
Raspberry (See "Blackberry" cluster)						
Rangeland (See "Grass" cluster)						
Rice						
Foliar Aerial	5 lb/gal EC [4787-20]	0.625-1.56 lb/A	NS	NS	7	Application should be made after the first blades appear on the surface of the water or during the early milk and dough stages using a minimum of 2 (aerial) gal of water/A. An unspecified number of repeat applications may be made as needed.
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.15-0.61 lb/A	NS	NS	7	Applications should be made when pests first appear and repeated as needed.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Rice (continued)						
ULV foliar Aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.61 lb/A	NS	NS	7	Use limited to LA and TX for rice (grain form). Applications should be made during early milk and dough stage of growing rice. An unspecified number of repeat applications may be made as needed.
Rutabaga						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94 lb/A	NS	NS	3	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Rye						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63-1.25 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.15-0.61 lb/A	NS	NS	7	Applications should be made when pests first appear and repeated as needed.
Safflower						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/A	NS	NS	3	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.61 lb/A	NS	NS	3	Applications should be made when pests first appear and repeated as needed.
Shallot (See "Garlic" cluster)						

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Sorghum						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.15-0.92 lb/A	NS	NS	7	Applications should be made when pests first appear and repeated as needed.
Soybean						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	1.88 lb/A	NS	NS	0	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.61 lb/A	NS	NS	7	Applications should be made when pests first appear and repeated as needed.
Spearmint (See "Peppermint" cluster)						
Spinach						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	1.25 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Squash						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	1.25-1.88 lb/A	NS	NS	1	Application should be made only when plants are dry using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Strawberry						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.88 lb/A	NS	NS	3	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Sugar Beet						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.88 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.61 lb/A	NS	NS	0 (beet, roots) 7 (tops)	Applications should be made when pests first appear and repeated as needed.
Sweet Potato						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.88 lb/A	NS	NS	3	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Swiss Chard (See "Dandelion" cluster)						
Tangelo (See "Citrus Fruits" cluster)						
Tangerine (See "Citrus Fruits" cluster)						
Tobacco						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.56 lb/A	NS	NS	0	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A. Use maximum dosage in plant beds.
Tomato						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-3.44 lb/A	NS	NS	1 day for rate up to 1.56 lb/A 3 day for rate up to 3.44 lb/A	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Tomato (continued)						
Foliar Commercial greenhouse Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/100 gal	NS	NS	1	Thorough application should be made to plants grown in commercial greenhouses using ground spray equipment.
ULV foliar Ground	9.79 lb/gal RTU [4787-8] [4787-25]	0.15-0.31 lb/A	NS	NS	1	Applications should be made when pests first appear and repeated as needed.
Turnip						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63-1.25 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A. Do not apply within 7 days if tops are to be used for food or feed.
Vetch						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/A	NS	NS	0	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
Walnut						
Foliar Ground	5 lb/gal EC [4787-20]	0.31 lb/100 gal or 0.94-2.5 lb/A	NS	NS	0	Applications may be made using conventional ground sprayer or air-carrier type sprayer (500 gal of water/A). For bait sprays of Walnut husk fly, combine the recommended rate with Staley's Sauce Base No. 2 or No. 7 at the rate of 2 qts per acre.
Watercress						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.94-1.25 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Watercress (continued)						
Foliar Commercial greenhouse Ground	5 lb/gal EC [4787-20]	0.94-1.25 lb/100 gal	NS	NS	7	Thorough application should be made to plants grown in commercial greenhouses using ground spray equipment.
Wheat						
Foliar Ground/aerial	5 lb/gal EC [4787-20]	0.63-1.25 lb/A	NS	NS	7	Application should be made using a minimum of 30 (ground) or 5 (aerial) gal of water/A.
ULV foliar Ground/aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.15-0.61 lb/A	NS	NS	7	Applications should be made when pests first appear and repeated as needed.
STORED RAW AGRICULTURAL AND PROCESSED COMMODITIES [4]						
Almond						
Stored commodity treatment Ground	5 lb/gal EC [4787-20]	0.16 lb/10,000 lbs of nuts	NS	NS	NS	A coarse spray application should uniformly be made using equipment that regulates the rate of application to the flow of almonds going into storage. Avoid spraying with fine mists that drift away. Shield the nozzle against wind and air currents.
Barley (See "Grains and Seeds" cluster)						
Cattle Feed Concentrate Blocks (Nonmedicated)						
Prestorage residual warehouse treatment Ground	5 lb/gal EC [4787-20]	5 lb/25 gal water	NS	NS	NS	Storage areas should be thoroughly cleaned before commodities are stored. Then, apply as a residual spray.
Treatment of paper used to wrap cattle feed Ground		0.16 lb/1 qt water [1 qt of finished spray/710 sq. ft]]	NS	NS	NS	Application should be made on the side next to the feed concentrate.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Citrus Pulp (Bagged)						
Prestorage residual warehouse treatment Ground	5 lb/gal EC [4787-20]	0.63 lb/2.5 gal water or 5 lb/19 gal water [2 gal finished spray/1,000 sq. ft or to run-off]	NS	NS	NS	Warehouse should be thoroughly cleaned of trash, debris, and sweepings before bagged citrus pulp is stored. Then, spray the interior of warehouse especially cracks and protected places. Treat outside walls to a height of 6-8 feet and the ground to a distance of 6 feet from the warehouse. Use of treated burlap bags other than for dried citrus pulp is prohibited.
Corn (See "Grains and Seeds" cluster)						
Grains (Including Barley, Corn, Oats, Rice, Rye, Sorghum, and Wheat) and Seeds (Including Field or Garden)						
Prestorage residual warehouse treatment Ground	5 lb/gal EC [4787-20]	5 lb/20-25 gal water	NS	NS	NS	Warehouse, grain elevators, and box cars should be thoroughly cleaned of trash, debris, and sweepings before storing grains. Then, spray the walls, floor, machineries, grain elevators, truck beds, box cars, ship's holds, and cracks and protected places of the warehouses before loading grains and seeds.
Spray treatment - as grains and seeds are going into storage Ground		0.63 lb/2-5 gal water/ 1,000 bushels	NS	NS	NS	Application should be made as the grains and seeds are being loaded or turned into final storage.
Surface spray treatment after grains are stored Ground		0.31 lb/1-2 gal water/ 1,000 sq. ft of grain surface area	NS	NS	NS	Application should be made over the surface of the grains immediately after they have been loaded into storage. An unspecified number of repeat applications may be made as needed.
Oats (See "Grains and Seeds" cluster)						
Peanut						

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Prestorage residual warehouse treatment Ground	5 lb/gal EC [4787-20]	0.63 lb/2.5 gal water or 5 lb/19 gal water [2 gal finished spray/1,000 sq. ft or to run-off]	NS	NS	NS	Warehouse should be thoroughly cleaned of trash and remains of old peanuts 1-2 weeks before new peanut crop is stored. Then, spray the interior of warehouse especially cracks and protected places. Treat outside walls to a height of 6-8 feet and the ground to a distance of 6 feet from the warehouse.
Bulk spray treatment - as peanuts are going into storage Ground		1.56 lb/5 gal water for each 15 tons of stock peanuts	NS	NS	NS	A coarse spray application should uniformly be made using equipment that regulates the rate of application to the flow of peanuts going into storage. Avoid spraying with a fine mist that drifts away by using low nozzle pressure. Shield the nozzle against wind and air currents.
Rice (See "Grains and Seeds" cluster)						
Rye (See "Grains and Seeds" cluster)						
Seeds (See "Grains and Seeds" cluster)						
Sorghum (See "Grains and Seeds" cluster)						
Wheat (See "Grains and Seeds" cluster)						
AQUATIC USES						
Standing Water (Including Intermittently Flooded Areas, Stagnant Water, and Temporary Rain Pools)						
Aquatic treatment Ground/aerial	5 lb/gal EC [4787-20]	0.51 lb/A	NS	NS	NS	Applications should be made in sufficient water or oil. An unspecified number of repeat applications may be made as needed.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
FOOD-HANDLING ESTABLISHMENTS						
Dry Milk Processing Plants						
Residual premise spray treatment Ground	5 lb/gal EC [4787-20]	0.63 lb/2.5 gal water	NS	NS	NS	Processing plant should be thoroughly cleaned prior to treatment. Application should be made to all sections of the plants and warehouses (i.e., cracks, corners, edges of floors, lower parts of walls, floors under storage platforms, and underneath and behind protected places) using equipment and nozzles capable of delivering a coarse spray. Contamination of milk, dry milk, equipment, utensils, work surfaces, containers and liners should be avoided. An unspecified number of repeat applications may be made as needed.
Food-Handling Establishments [Including Areas for Receiving, Serving, Storage, Packing (Canning, Bottling, Wrapping, Boxing), Preparing, Edible Waste Storage, and Enclosed Processing Systems (Mills, Dairies, Edible Oils, and Syrups)]						
Crack and crevice treatment	5 lb/gal EC [4787-20]	0.63 lb/2.5 gal water or 1 part in 19 parts mixture of 4 parts kerosene-type solvent and 1 part aromatic hydrocarbon-type solvent	NS	NS	NS	Applications should be made into cracks and crevices using pin stream type of sprayer capable of delivering into points such as expansion joints between different elements of construction or between equipment bases and the floor, wall voids, motor housing, junction boxes or switch boxes, conduits or hollow equipment legs where insects hide. Contamination of food or food-processing surfaces should be avoided. An unspecified number of repeat applications may be made as needed.
Premises of Food-Handling Establishments (including Meat- and Food-Processing Plants)						

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Premise treatment Straight sprays Ground	5 lb/gal EC [4787-20]	1.25 lb/12 gal water [1-2 gal of finished spray/1,000 sq. ft]	NS	NS	NS	Spray applications should be made in and around buildings of meat and food-processing plants. Use in edible product areas of food-processing plants, restaurants, or other areas where food is commercially prepared or processed is prohibited. An unspecified number of repeat applications may be made as needed.
Wineries and Processing Plants						
Premise treatment Ground	5 lb/gal EC [4787-20]	0.14 lb/1 qt water	NS	NS	NS	Applications should be made by painting the finished solution onto doors and window screens of wineries. Contamination of wine, food, utensils, equipment, and water should be avoided.
FARM ANIMALS AND ANIMAL PREMISES [5]						
Animal Premises						
Premise treatment Straight sprays Ground	5 lb/gal EC [4787-20]	1.25 lb/12 gal water [1-2 gal of finished spray/1,000 sq. ft]	NS	NS	NS	Spray applications should be made on painted and unpainted surfaces where flies alight or congregate such as walls, ceilings, stanchions, and windows of dairy barns, fences, around garbage cans, etc. An unspecified number of repeat applications may be made as needed.
Premise treatment ULV Ground/Aerial	9.79 lb/gal RTU [4787-8] [4787-25]	0.46-0.61 lb/A	NS	NS	NS	Applications to beef cattle feed lots and holding pens should be made when pests first appear and repeated as needed.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Animal Premises (continued)						
Premise treatment Bait sprays Ground	5 lb/gal EC [4787-20]	1.25 lb + 2.5 sugar or 1 qt molasses or 1 qt corn syrup + 12 gal water	NS	NS	NS	Applications should be made as a bait spray over the surface of manure or poultry droppings. In loafing sheds, the dry bedding should be sprayed within 18 inches of the walls and around upright braces. Application to freshly whitewashed surfaces should not be made. A waiting period of 14 days is recommended prior to application to freshly whitewashed surfaces.
Cattle (Beef and Non-Milking) and Horses						
Animal spray treatment Ground	5 lb/gal EC [4787-20]	5-10 lb/100 gal	NS	NS	NS	Thorough spray applications should be made, and treatment repeated at 2-week interval as needed. Applications to lactating dairy animals or non-lactating dairy animals within two weeks of freshening, and the treatment of animals under one month of age are prohibited.
Animal treatment Back rubber device		2% finished spray in fuel oil	NS	NS	NS	Application should be made through continuously accessible back rubbers recharged every 14 to 21 days to deliver ~2% finished spray.
Goats and Sheep						
Animal spray treatment Ground	5 lb/gal EC [4787-20]	5 lb/100 gal	NS	NS	NS	Thorough spray applications should be made, and treatment repeated at 2- to 3-week intervals as needed. Treatment of milk goats and animals under one month of age is prohibited.

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Hogs						
Animal spray treatment Ground	5 lb/gal EC [4787-20]	5 lb/100 gal	NS	NS	NS	Thorough spray applications should be made to swine, pens, litters, beddings, and walls. Applications may be repeated as needed. Swine should be kept out of sun and wind for a few hours following spray treatment.
Horses (See "Cattle" cluster)						
Poultry (Including Chickens, Ducks, Geese, and Turkeys)						
Poultry spray treatment Ground	5 lb/gal EC [4787-20]	2 tbls product/1 gal water/100-150 birds	NS	NS	NS	Thorough spray applications should be made. Applications may be repeated at 4- to 8-week intervals as needed. Treatment should be used as a supplement to premise treatment.
Poultry tail dipping Ground		0.33 lb/15 gal water/400 birds	NS	NS	NS	Applications should be made by holding the bird by wings and dipping 3-4 inches of tail into solution. Vent and surrounding areas should also be treated. Applications may be repeated at 7- to 10-day intervals as needed.
Poultry roost paint Ground		0.08-0.27 lb/1 gal water [1 pt of finished spray per 150 ft of roost]	NS	NS	NS	Applications should be made by brushing finished solution onto poultry roost.
Poultry premise treatment Ground		4 tbls product/1 gal water or 0.23-0.27 lb/gal water	NS	NS	NS	Thorough spray applications should be made to litter, walls, roost nests and adjacent areas. Force spray into cracks and crevices.
Poultry (Including Chickens, Ducks, Geese, and Turkeys)(continued)						

(continued; footnotes follow)

Table A2 *(continued)*.

Site Application Timing Application Type Application Equipment	Formulation [EPA Reg. No.]	Single Application Rate, ai	Maximum Number of Applications Per Season	Maximum Seasonal Rate, ai	Preharvest Interval, Days	Use Limitations [2, 3]
Poultry range treatment Ground	5 lb/gal EC [4787-20]	0.63-0.94 lb/A	NS	NS	NS	Thorough spray applications should be made before placing poultry on range. Repeat applications may be made at 2- to 3-week intervals as needed.
Sheep (See "Goats" cluster)						

[1] This table was compiled in July of 1997as an aid to residue chemistry data review. This table is now out of date (for example reg.numbers for most formulations have changed) but is included for informational purposes. See the Malathion LUIS report compiled by BEAD for complete use information on malathion.

[2] The restricted entry interval (REI) for the 9.79 lb/gal (EPA Reg. Nos. 4787-8 and 4787-25) is 12 hours.

[3] Application of the 5 lb/gal EC formulation (EPA Reg. No. 4787-20) through any type of irrigation system is prohibited.

[4] Indoor use of malathion should be conducted only with adequate ventilation. The enclosed spaces should be ventilated after using the registered formulation(s). Contact with treated surface should not be allowed until sprays have dried.

[5] When applied as an animal premise treatment, contamination of milk, milk equipment, water, feed/food products, drinking fountains, and feed troughs should be avoided. Lactating dairy animals and animals under one month of age should be removed from the premises before treating.

Table B. Residue Chemistry Science Assessments for Reregistration of Malathion.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
860.1200: Directions for Use	N/A = Not Applicable	Yes [2]	See Tables A1 and A2.
860.1300: Plant Metabolism	N/A	No	00153985, 40397102, 40397103, 42317401 [3], 42482601 [4], 42538901 [5], 42583401 [6]
860.1300: Animal Metabolism	N/A	No [7]	00108942, 00120105, 40415701, 42581401 [8], 42715401 [9], 42744401 [9, 63]
860.1340: Residue Analytical Methods			
- Plant commodities	N/A	No [10]	00033810, 00034342, 00035014, 00035318, 00035330, 00035870, 00058823, 00080769, 00089237, 00089521, 00096676, 00102376, 00104631, 00108941, 00113099, 00113100, 00113135, 00113137, 00113141, 00113142, 00113143, 00113147, 00113149, 00113150, 00113171, 00113173, 00113186, 00113188, 00113203, 00113205, 00113212, 00113223, 00113229, 00113230, 00122714, 40397104, 42894601 [11], 43630301 [12]
- Animal commodities	N/A	No [13]	00058823, 00089256, 00098775, 00108941, 00113116, 00120105, 40397101, 40397105
860.1360: Multiresidue Methods	N/A	No	
860.1380: Storage Stability Data			

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Plant commodities	N/A	No	00048370, 00089256, 00089521, 00089808, 00113137, 00113206, 43549001 [14], 43684801 [14], 43910901 [15]
- Animal commodities	N/A	No [16]	
860.1500: Crop Field Trials [17]			
Root and Tuber Vegetables Group			
- Beet, garden, roots	8 (Pre-H) [180.111]	No [18]	00113116
- Beet, sugar, roots	1 (Pre-H) [180.111]	No [39]	
- Carrot	8 (Pre-H) [180.111]	No	00100020, 00159270, 44441601 [19]
- Chayote root	8 [180.111]	No [20]	
- Horseradish	8 (Pre-H) [180.111]	No [18]	
- Parsnip	8 (Pre-H) [180.111]	No [18]	00100020
- Potato	8 (Pre-H) [180.111]	No [21]	00089248, 43360401 [22]
- Radish, roots	8 (Pre-H) [180.111]	No [18, 23]	00100020

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Rutabaga, roots	8 (Pre-H) [180.111]	No [18]	
- Salsify, roots	8 (Pre-H) [180.111]	No [18]	
- Sweet potato	1 (Pre-H) [180.111]	No [24]	
- Turnip, roots	8 (Pre-H) [180.111]	No [18]	44266401 [25]
Leaves of Root and Tuber Vegetables Group			
- Beet, garden, tops	8 (Pre-H) [180.111]	No [18]	00113116, 00113212
- Beet, sugar, tops	8 (Pre-H) [180.111]	No [39]	00113188
- Radish, tops	None established	No [18, 23]	
- Salsify, tops	8 (Pre-H) [180.111]	No [18]	
- Turnip, tops	8 (Pre-H) [180.111]	No [18]	00089260, 44266401 [25]
Bulb Vegetables (*Allium spp.*) Group			
- Garlic	8 (Pre-H) [180.111]	No [26]	

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Leek	8 (Pre-H) [180.111]	No [26]	
- Onion, bulb and green	8 (Pre-H) [180.111]	No [27]	00089248, 43350401 [28], 43383301 [28]
- Shallot	8 (Pre-H) [180.111]	No [26]	
Leafy Vegetables (Except *Brassica* Vegetables) Group	8 [180.111]	Yes [29]	
- Celery	Group tolerance established	Yes [30]	00089247, 00113212
- Dandelion	Group tolerance established	No	
- Endive (escarole)	Group tolerance established	No [23]	00100020
- Lettuce	Group tolerance established	No [23, 31]	00057674, 00089260, 00100020, 00113143, 00113171, 00120105, 43362501 [22], 43367201 [22]
- Parsley	Group tolerance established	No	00100020, 00159270
- Spinach	Group tolerance established	No	00057674, 00089260, 00113143, 44272401 [25]
- Swiss chard	Group tolerance established	No	00100020, 00159270

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
Brassica (Cole) Leafy Vegetables Group	8 [180.111]	No	
- Broccoli	Group tolerance established	No [32]	00089259, 00089260, 44203901 [33]
- Brussels sprouts	Group tolerance established	No	
- Cabbage	Group tolerance established	No [34]	00089260, 00113143, 44232601 [33]
- Cauliflower	Group tolerance established	No	00089260
- Collards	Group tolerance established	No	00100020, 00115976
- Kale	Group tolerance established	No	00089260
- Kohlrabi	Group tolerance established	No	00057674, 00100020
- Mustard greens	Group tolerance established	No	00089260, 44271101 [25]
Legume Vegetables (Succulent or Dried) Group			
- Bean (succulent and dry)	8 (Pre-H) [180.111]	No [35]	00089245, 00100020, 00113143, 00113166, 43372701 [22], 43376801 [22], 43417601 [28]

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Lentil	8 (Pre-H) [180.111]	No [36]	
- Lupin seed	8 (Pre-H) [180.111]	No [37]	
- Pea (succulent)	8 (Pre-H) [180.111]	No [38]	00113099, 00113120, 44205901 [33]
- Soybean seed and aspirated grain fraction	8, dry and succulent (Pre-H) [180.111]	No [39]	00145201
<u>Foliage of Legume Vegetables Group</u>			
- Cowpea forage and hay	135 (Pre-H) [180.111]	No [39]	
- Pea (field) vines and hay	8 (Pre-H) [180.111]	No [38]	00113099, 00113120
- Soybean forage and hay	135 (Pre-H) [180.111]	No [39]	00108941
<u>Fruiting Vegetables (Except Cucurbits) Group</u>			
- Eggplant	8 (Pre-H) [180.111]	No [40]	00089250, 00113212

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Pepper	8 (Pre-H) [180.111]	No [41]	00089250, 00113212, 43175501 [42]
- Tomato	8 (Pre-H) [180.111]	No [23, 43]	00089250, 00100020, 00113143, 00113182, 00113212, 00113214, 00120105, 43372901 [22]
Cucurbit Vegetables Group			
- Chayote fruit	8 [180.111]	No[44]	
- Cucumber	8 (Pre-H) [180.111]	No [23, 45]	00089249, 00100020, 43370601 [22]
- Melon	8 (Pre-H) [180.111]	No [46]	00089249, 43107602 [47], 44098401 [33]
- Pumpkin	8 (Pre-H) [180.111]	No [48]	
- Squash	8 (Pre-H) [180.111]	No [49]	00100020
Citrus Fruits (*Citrus spp.* and *Fortunella spp.*) Group			
- Grapefruit	8 (Pre-H) [180.111]	No [50]	00089052

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Kumquat	8 (Pre-H) [180.111]	No [50]	
- Lemon	8 (Pre-H) [180.111]	No [50]	00113203
- Lime	8 (Pre-H) [180.111]	No [50]	
- Orange	8 (Pre-H) [180.111]	No [51]	00089052, 00113116, 00113182, 00113203, 43078701 [42]
- Tangerine	8 (Pre-H) [180.111]	No [50]	00113182
Pome Fruits Group			
- Apple	8 (Pre-H) [180.111]	Yes [52]	00057674, 00089258, 43107601 [47], 43107603 [47], 44009601 [53]
- Pear	8 (Pre-H) [180.111]	No [54]	00089258, 44013701 [33]
- Quince	8 (Pre-H) [180.111]	Yes [55]	
Stone Fruits Group			
- Apricot	8 (Pre-H) [180.111]	No [56]	00089239, 44120001 [33]

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Cherry	8 (Pre-H) [180.111]	No [57]	00035314, 00035870, 00057674, 00089239, 00113143, 43108201 [42], 43078702 [42]
- Nectarine	8 (Pre-H) [180.111]	No [58]	
- Peach	8 (Pre-H) [180.111]	No [59]	00057674, 00113182, 44016001 [33]
- Plum	8 (Pre-H) [180.111]	No [39]	
Berries Group			
- Blackberry	8 (Pre-H) [180.111]	No	00100020, 00159270, 44282201[60]
- Blueberry	8 (Pre-H) [180.111]	No [61]	00035015, 00089242, 00113165, 00113170, 00113176, 00113193, 00113229, 43372601 [28]
- Boysenberry	8 (Pre-H) [180.111]	No [62]	
- Currant	8 (Pre-H) [180.111]	No [63]	
- Dewberry	8 (Pre-H) [180.111]	No [62]	

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Gooseberry	8 (Pre-H) [180.111]	No [63]	
- Loganberry	8 (Pre-H) [180.111]	No [62]	
- Raspberry	8 (Pre-H) [180.111]	No [62]	44282101 [60]
Tree Nuts Group			
- Almond, nutmeat and hulls	8, almonds (Pre- and Post-H) [180.111]; 50, hulls (Pre-H) and shells [180.111]	No [39]	00108941
- Chestnut	1 (Pre-H) [180.111]	No	00116023, 44478401 [64]
- Filbert	1 (Pre-H) [180.111]	No [39]	
- Macadamia nut	1 (Pre-H) [180.111]	No [65]	00108941, 44076801 [33]
- Pecan	8 (Pre-H) [180.111]	No [66]	
- Walnut	8 (Pre-H) [180.111]	No	00104631, 00120105, 44383301 [67]

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
Cereal Grains Group [68]			
- Barley grain	8 (Pre- and Post-H) [180.111]	No [69]	00089253
- Corn (field) grain and aspirated grain fractions	8 (Post-H) [180.111]	No [70, 71]	00138431, 43468201 [22], 43577401 [72]
- Corn (sweet) K+CWHR	2 (Pre-H) [180.111]	No [73]	00057674, 00138431, 43361101 [22]
- Oat grain	8 (Pre- and Post-H) [180.111]	No [69]	00120105, 00153987
- Rice grain	8 (Pre- and Post-H) [180.111]	No [74]	43468101 [28]
- Rye grain	8 (Pre- and Post-H) [180.111]	No [69]	
- Sorghum grain and aspirated grain fractions	8 (Pre- and Post-H) [180.111]	No [70, 75]	00035013, 00105387, 43360001 [22]
- Wheat grain and aspirated grain fractions	8 (Pre- and Post-H) [180.111]	No [69, 76]	43414901 [28], 43350402 [28]
- Wild rice grain	8 [180.111]	No [77]	00113143
Forage, Fodder, and Straw of Cereal Grains Group			
- Barley hay and straw	None established	Yes [69]	

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Corn (field) forage and stover	8, forage (Pre-H) [180.111]	No [71]	43468201 [22]
- Corn (sweet) forage and stover	8, forage (Pre-H) [180.111]	Yes [73, 78]	43361101 [22]
- Oat forage, hay, and straw	None established	Yes [69]	
- Rice straw	None established	No [74]	43468101 [28]
- Rye forage and straw	None established	No [69]	
- Sorghum forage and stover	8, forage (Pre-H) [180.111]	Yes [75, 79]	00035013, 00153987
- Wheat forage, hay, and straw	None established	Yes [76, 80]	43414901 [28], 43350402 [28]
Grass Forage, Fodder, and Hay Group			
- Grass (pasture and rangeland) forage and hay	135, grass and grass, hay (Pre-H) [180.111]	No [81]	00089251, 00108941, 43362601 [28]
Nongrass Animal Feeds (Forage, Fodder, Straw, and Hay) Group			
- Alfalfa forage and hay	135 (Pre-H) [180.111]	No [82]	00035330, 00035886, 00035890, 00089252, 00089521, 43546101 [72]
- Clover forage and hay	135 (Pre-H) [180.111]	No [83]	00089521, 43545201 [72]

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Lespedeza forage and hay	8, seed (Pre-H) [180.111]; 135, hay and straw (Pre-H) [180.111]	No [84]	
- Lupin foliage, fodder, straw, hay	135, lupine hay and straw (Pre-H) [180.111]	No [85]	
- Trefoil forage and hay	135, Birdsfoot trefoil forage and hay (Pre-H) [180.111]	No [86]	
- Vetch forage and hay	8, seed (Pre-H) [180.111]; 135, hay and straw (Pre-H) [180.111]	No [87]	00034458
Miscellaneous Commodities			
- Asparagus	8 (Pre-H) [180.111]	No	00034344, 00120105, 44436101 [88]
- Avocado	8 (Pre-H) [180.111]	No [89]	00113116, 43383501 [28]
- Cotton, seed and gin byproducts	2, seed (Pre-H) [180.111]	Yes [90]	00035318, 00102291, 00102376, 00103342, 00103343, 00108949, 00113097, 00113147, 00113186, 43596601 [72]

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Cranberry	8 (Pre-H) [180.111]	No [39]	00089242
- Date	8 (Pre-H) [180.111]	Yes [91]	00095763, 43473601 [92], 43688701[93]
- Fig	8 (Pre-H) [180.111]	No [94]	00089593, 00120105, 44061201 [33]
- Flax	0.1, seed [180.111]; 1, straw [180.111]	No [95]	00113137, 43991401 [53]
- Grape	8 (Pre-H) [180.111]	No [96]	00048370, 00089242, 00101150, 00113095, 00113205, 00113206, 43383401 [28]
- Guava	8 (Pre-H) [180.111]	No	00120105, 44391501 [97]
- Hops, dried	1 (Pre-H) [180.111]	No	00113118, PP#3H5668 [98]
- Mango	8 (Pre-H) [180.111]	No	00089254, 00113182, 44480301[99]
- Mint (peppermint and spearmint)	8 (Pre-H) [180.111]	No [100]	00120105, 44124801 [33]
- Mushroom	8 (Pre-H) [180.111]	No [101]	00030482, 00120105, 44001101 [33]

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Okra	8 (Pre-H) [180.111]	No [102]	00100020, 00108941, 44232701 [33]
- Papaya	1 (Pre-H) [180.111]	No	00108941, 44331001 [103]
- Passion fruit	8 (Pre-H) [180.111]	No	00113182, 44472801[104]
- Peanut nutmeat and hay	8, peanuts (Pre- and Post-H) [180.111]; 135, forage and hay (Pre-H) [180.111]	No [39]	
- Pineapple	8 (Pre-H) [180.111]	No	00113116, 44613801 [105]
- Safflower	0.2 (Pre-H) [180.111]	No [39]	00113230
- Strawberry	8 (Pre-H) [180.111]	No [106]	00085524, 00089242, 00115967, 43368301 [22], 44094401 [33]
- Watercress	None established	No [23, 107]	00120105, 44094801 [33]
- Tobacco	N/A	No [108]	

Stored Raw Agricultural and Processed Commodities

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Almond nutmeat and hulls	8, almonds (Pre- and Post-H) [180.111]; 50, hulls (Pre-H) and shells [180.111]	No [39]	00104631, 00113121, 00113134
- Barley grain	8, grain (Pre- and Post-H) [180.111]	No [109]	
- Cattle feed concentrate blocks (non-medicated)	10 [186.3850]	No [110]	FAP#0798
- Citrus pulp	50 [186.3850]	No [111]	00113203
- Corn grain and aspirated grain fractions	8 (Post-H) [180.111]	No [112, 113]	00058827, 00058828, 43666801 [114]
- Oats grain	8 (Pre- and Post-H) [180.111]	Yes[109]	
- Peanut nutmeat	8 (Pre- and Post-H) [180.111]	No [39]	00035130, 00080769, 00089808
- Raisin	12 [185.3850]	No [115]	
- Rice grain	8 (Pre- and Post-H) [180.111]	No [116]	00058824
- Rye grain	8 (Pre- and Post-H) [180.111]	No [109]	

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Sorghum grain and aspirated grain fractions	8 (Pre- and Post-H) [180.111]	No [112]	00058828
- Sunflower seeds	8 (Post-H) [180.111]	No [39]	00096676
- Wheat grain and aspirated grain fractions	8 (Pre- and Post-H) [180.111]	No [113, 117]	00034951, 00058826, 00058828, 00089808, 43661401 [114]
860.1520: Processed Food/Feed			
- Apple	None established	No	44009601 [53]
- Barley	None established	Yes [118]	
- Citrus	50, bagged dried citrus pulp [186.3850]	No	00113203, 43451701 [28]
- Corn, field	None established	No	00058827, 00058828, 43577401 [72], 43666801 [114]
- Cottonseed	None established	No	43585301 [72]
- Fig	None established	No	44061201 [33]
- Flax	None established	Yes [119]	43991401 [53]
- Grape	12, raisins [185.3850]	No [120]	43548401 [72]
- Mint (peppermint and spearmint)	None established	No	44124801 [33]
- Oats	None established	Yes [118]	

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Peanut	None established	No [39]	00035130, 00080769, 00089808
- Pineapple	None established	No [121]	44613801 [105]
- Plum	None established	No [39]	
- Potato	None established	No	43524101 [122]
- Rice	None established	No [123]	00058824, 43562301 [72]
- Rye	None established	Yes [118]	
- Safflower	0.6, refined oil [185.3850]	No [39]	
- Sorghum	None established	No	00058828
- Soybean	None established	No [39]	
- Sugar beet	None established	No [?]	
- Sunflower	None established	No [39]	00096676
- Tomato	None established	No	43499901 [22]
- Wheat	None established	Yes [124]	00034951, 00058826, 00058828, 00089808, 43510501 [125], 43661401 [114]
860.1480: Meat, Milk, Poultry, Eggs			
- Fat, Meat, and Meat Byproducts of Cattle, Goats, Hogs, Horses, and Sheep	4, fat, meat, and mbyp (Pre-S) [180.111]	No [7]	00082336, 00113120, 00113191, 00120105

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Milk	0.5, fat (from application to dairy cows) [180.111]	No [7]	00005309, 00034457, 00034461, 00088051, 00089255, 00089562, 00113101, 00113175, 00120105, 05006630
- Eggs and the Fat, Meat, and Meat Byproducts of Poultry	4, fat, meat, and mbyp (Pre-S); 0.1, eggs (from application to poultry) [180.111]	No [7]	00108941, 00113234, 00113236
860.1400: Water, Fish, and Irrigated Crops	None established	Yes [126]	00163283
860.1460: Food Handling	None established	No [127]	00058825
860.1850: Confined Rotational Crops	N/A	No	42785501 [128]
860.1900: Field Rotational Crops	None established	Yes [129]	

1. Unfootnoted references were reviewed in the Residue Chemistry Science Chapter of the Malathion Reregistration Standard dated 7/31/87. All other references were reviewed as noted.

2. The registrant must comply with OPPTS 860.1500 regarding the use of ground or aerial equipment. Unless adequate field trial data reflecting aerial application of malathion in <2 gal of water/A (<10 gal of water/A for tree or orchard crops) are available, malathion product labels must specify that aerial applications are to be made in a minimum of 2 gallons water per acre (or 10 gallons per acre in the case of tree or orchard crops).

3. DP Barcodes D178988 and D187721; 7/30/92 and 4/21/93; R. Perfetti.

4. DP Barcode D183392, 12/30/92, R. Perfetti.

5. DP Barcode D185199, 3/2/93, R. Perfetti.

6. DP Barcode D187719, 4/19/93, R. Perfetti.

7. If the direct animal treatment uses of malathion to poultry and livestock animals are canceled, then appropriate dermal metabolism and magnitude of the residue studies are not required.

8. DP Barcode D187715, 5/18/93, R. Perfetti.

Table B *(continued)*.

9. DP Barcodes D190598 and D191327, 7/27/93, R. Perfetti.

10. Pending a successful tolerance method validation to be conducted by EPA's Beltsville Laboratory, American Cyanamid Method M-1866 will be approved for enforcement purposes.

11. DP Barcode D196878, 2/28/94, R. Perfetti.

12. DP Barcode D215369, 8/29/95, D. Hrdy.

13. If the direct animal treatment uses of malathion to poultry and livestock animals are canceled, then residue analytical methods capable of determining malathion residues of concern in eggs, milk, and animal tissues are not required.

14. DP Barcodes D213229 and D219313, 11/7/95, D. Miller.

15. DP Barcode D223392, 9/23/97, W. Smith.

16. If the direct animal treatment uses of malathion to poultry and livestock animals are canceled, then storage stability data for malathion residues of concern in eggs, milk, and animal tissues are not required.

17. The available field trial data for crops the registrant(s) wishes to support reflect use of representative EC and/or RTU formulations only. If the registrant(s) wishes to support additional malathion formulation classes, then residue data reflecting other formulation classes are required.

18. The available data pertaining to malathion residues of concern in/on turnip roots and tops may be translated to beet (garden) roots and tops, horseradish, parsnip, radish roots and tops, and rutabaga. The product labels for all relevant formulations must be modified to make the use patterns for beet (garden), horseradish, parsnip, radish, and rutabaga consistent with turnip.

19. DP Barcode D242507; 4/24/98; M. Xue.

20. The available field trial data on potatoes will be translated to support chayote roots.

21. The product label for EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on potatoes: a maximum of two foliar applications per growing season at 1.56 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 0-day PHI.

22. DP Barcodes D208047, D210189, D210843, and D210294; 4/27/95; D. Hrdy.

23. No registrants have committed to support malathion uses on any greenhouse-grown crop. Therefore, the greenhouse use patterns for the above crops should be deleted from all malathion end-use product labels. The reassessment of tolerances will be conducted with the assumption that uses of malathion only on field-grown cucumber, endive, lettuce, radish, tomato, and watercress will be supported for reregistration.

24. The available data for potato may be translated to sweet potato provided label revisions are made for EC formulations to make the use pattern for sweet potato identical to potato.

25. DP Barcodes D236036, D236038, D236039; 9/29/98; M. Xue.

Table B *(continued)*.

26. The available data pertaining to malathion residues of concern in/on onion (bulb and green) may be translated to garlic, leek, and shallot. The product labels for all pertinent EC formulations must be modified to make the use patterns for garlic, leek, and shallot consistent with uses on onion (bulb and green).

27. The product label for all pertinent EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on onions (dry bulb and green): a maximum of five foliar applications per growing season at 1.56 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 3-day PHI.

28. DP Barcodes D208233, D208242, D208772, D209529, and D210188; 1/8/99; M. Xue.

29. To support and/or maintain the existing crop group tolerance for leafy vegetables (except *Brassica* vegetables), additional data are required for the representative member celery.

30. The following are required: Data depicting residues of malathion and malaoxon in/on celery following applications of an appropriate EC formulation according to the maximum proposed/registered use patterns. The number of field trials and geographic locations of trial sites should be in compliance with the current guidance.

31. The product label for all pertinent EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on field-grown head and leaf lettuce: a maximum of six foliar applications per growing season at 1.88 lb ai/A/application using ground equipment, with a 5-day retreatment interval and a 14-day PHI.

32. The labels for all applicable EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on field-grown broccoli: a maximum of five foliar applications per growing season at 1.25 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 3-day PHI.

33. DP Barcodes D233233, D228271, D227872, D228961, D229875, D231358, D233103, and D234461; 9/29/98; M. Xue.

34. The labels for all applicable EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on field-grown cabbage: a maximum of six foliar applications per growing season at 1.25 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 7-day PHI.

35. The product label for applicable 9.79 lb/gal RTU formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on dry and succulent beans: a maximum of three foliar applications per growing season at 0.61 lb ai/A/application using ULV aerial equipment, with a 7-day retreatment interval and a 1-day PHI. In the absence of field trial data reflecting use of an EC formulation, the registered use of this formulation class on dry and succulent beans should be deleted from the label.

36. Adequate data are not available for lentils and only succulent type of peas are being supported for reregistration. Consequently, all pertinent product labels must be amended to deletes use on lentils and the tolerance on lentils should be revoked.

37. Field trial data on dry beans are adequate to support the tolerance on lupin seed.

Table B *(continued)*.

38. Only succulent type of peas are being supported for reregistration. Consequently, no data are required for field pea seed, vines, and hay. The product labels for all pertinent EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on succulent peas: a maximum of five foliar applications per growing season at 2.5 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 3-day PHI. In the absence of field trial data reflecting use of a 9.79 lb/gal RTU formulation, the registered use of this formulation class on all types of peas should be deleted from the labels.

39. No registrant has committed to support malathion uses on the following crops: almonds; cowpea; cranberry; filbert; pea (field); plums/prunes; safflower; soybean; sugar beets; and sunflower. Unless an interested party submits supporting data, the above crops should be deleted from all malathion end-use product labels and the established tolerances for the respective RACs should be revoked.

40. The available data pertaining to malathion residues of concern in/on tomato may be translated to eggplant. The product label for all pertinent EC formulations must be modified to make the use pattern for eggplant consistent with tomato.

41. The product label for all pertinent EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on peppers: a maximum of five foliar applications per growing season at 1.56 lb ai/A/application using ground equipment, with a 5-day retreatment interval and a 3-day PHI.

42. DP Barcodes D199259, D203201, and D203620; 9/6/94, R. Perfetti.

43. The product label for all pertinent EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on field-grown tomatoes: (i) a maximum of five foliar applications per growing season at 3.43 lb ai/A/application using ground equipment, with a 5-day retreatment interval and a 3-day PHI; or (ii) a maximum of five foliar applications per growing season at 1.56 lb ai/A/application using ground equipment, with a 5-day retreatment interval and a 1-day PHI.

44. Field trial data on cucumbers will be used for reassessment of the established tolerance for malathion on chayote fruit.

45. The product label for all pertinent EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on field-grown cucumbers: a maximum of three foliar applications per growing season at 1.88 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 1-day PHI.

46. The product label for all pertinent EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on melon: a maximum of six foliar applications per growing season at 1.0 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 1-day PHI.

47. DP Barcode D203171, 10/18/94, R. Perfetti.

48. The available data pertaining to malathion residues of concern in/on melon may be translated to pumpkin. The product label for all pertinent EC formulations must be modified to make the use pattern for pumpkin consistent with melon.

Table B *(continued)*.

49. The available data pertaining to malathion residues of concern in/on cucumber and melon may be translated to summer and winter squash, respectively. The product label for all pertinent EC formulations must be modified to make the use pattern for summer squash consistent with cucumber, and for winter squash to be consistent with melon.

50. The available data pertaining to malathion residues of concern in/on orange may be translated to grapefruit, kumquat, lemon, lime, and tangerine. All pertinent EC product labels and 9.79 lb/gal RTU labels must be modified to make the use patterns for grapefruit, kumquat, lemon, lime, and tangerine consistent with orange.

51. The product labels for all pertinent EC and 9.79 lb/gal RTU formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on orange: (i) a maximum of three foliar applications per growing season of the 5 lb/gal EC formulation at 6.25 lb ai/A/application using ground equipment, with a 30-day retreatment interval and a 7-day PHI; and (ii) a maximum of ten foliar applications per growing season of the 9.79 lb/gal RTU formulation at 0.175 lb ai/A/application using aerial ULV equipment, with a 7-day retreatment interval and a 1-day PHI.

52. The apple data submitted by IR-4 and reflecting six apple field trials are inadequate because of meager geographic representation. Additional apple field trials must be conducted. The required field trials should be conducted in major U.S. apple-growing regions according to the maximum use pattern (i.e., five foliar applications, with a 7- to 11-day retreatment interval, of a representative EC formulation at 1.25 lb ai/A/application using ground equipment) the registrant(s) wishes to support.

53. DP Barcodes D226183 and D226546, 12/10/98, M. Xue.

54. The product labels for all pertinent EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on pear: a maximum of five foliar applications per growing season at 1.25 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 1-day PHI.

55. Apple field trial data may be translated to quince. When adequate apple data have been submitted and evaluated, label revisions will be required to make the use patterns for quince consistent with apple.

56. The product labels for all pertinent EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on apricot: a maximum of four foliar applications per growing season at 3.75 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 7-day PHI.

57. The product labels for all pertinent EC and 9.79 lb/gal RTU formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on cherry: (i) a maximum of six foliar applications per growing season of the 5 lb/gal EC formulation at 3.75 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 3-day PHI; and (ii) a maximum of six foliar applications per growing season of the 9.79 lb/gal RTU formulation at 1.22 lb ai/A/application using aerial ULV equipment, with a 7-day retreatment interval and a 1-day PHI.

58. The available apricot field trial data may be translated to nectarine. The product label for all pertinent EC formulations must be modified to make the use pattern for nectarine consistent with apricot.

59. The product label for all pertinent EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on peach: a maximum of five foliar applications per growing season at 3.75 lb ai/A/application using ground equipment, with a 14-day

retreatment interval and a 7-day PHI.

60. DP Barcodes D236409 & D236410, M. Xue, 3/11/98.

61. Provided that label revisions are made for the all pertinent EC and 9.79 lb/gal RTU formulations to reflect the use patterns used in the current field trials, no additional field residue data for blueberries will be required for reregistration purposes. The available data will support: (i) four foliar applications, with a 4-day retreatment interval, a 1 day PHI, using the 5 lb/gal EC formulation at 0.63 lb ai/A/application with 1.5 qt/A of protein hydrolysate bait in 20 gal of water/A with ground equipment; and (ii), five foliar applications, with a 10-day retreatment interval, a 0-day PHI, of the 9.79 lb/gal RTU formulation at 0.76 lb ai/A using aerial ULV equipment.

62. Blackberry and raspberry field trial data may be translated to boysenberry, dewberry and loganberry provided revisions are made to all pertinent EC and WP labels to make the use patterns consistent.

63. Blueberry field trial data may be translated to currant and gooseberry provided revisions are made to all pertinent EC labels to make the use patterns consistent.

64. DP Barcode D243536, 6/5/98, M. Xue.

65. All pertinent EC labels must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on macadamia nut: a maximum of seven foliar applications per growing season at 0.94 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 1-day PHI.

66. Walnut field trial data may be translated to pecan provided all pertinent EC labels are modified to make the use patterns consistent.

67. DP Barcodes D239267 and D239795, 1/27/98, W. Smith.

68. The status of reregistration requirements for data pertaining to malathion residues of concern in/on cereal grains resulting from postharvest applications and in commodities processed from cereal grains are addressed in the section entitled "Stored Raw Agricultural Commodities and Processed Commodities".

69. The available data pertaining to malathion residues of concern resulting from preharvest applications on wheat grain may be translated to barley grain, oat grain, and rye grain. The available data pertaining to malathion residues of concern resulting from preharvest applications on wheat forage and straw may be translated barley straw, oat forage and straw, and rye forage and straw. The requested data for wheat hay may be translated to barley hay and oat hay.

70. The available data pertaining to malathion residues of concern on field corn aspirated grain fractions resulting from preharvest applications may be translated to sorghum aspirated grain fractions.

71. The product labels for all pertinent EC and 9.79 lb/gal RTU formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion preharvest use on field corn: (i) a maximum of three foliar applications per growing season of the 5 lb/gal EC formulation at 1.25 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 7-day PHI; and (ii) a maximum of three foliar applications per growing season of the 9.79 lb/gal RTU formulation at 0.61 lb ai/A/application using aerial ULV equipment, with a 7-day retreatment interval and a 7-day PHI.

Table B *(continued)*.

72. DP Barcodes D213105 and D213929; 11/5/98; M. Xue.

73. The product labels for all pertinent EC and 9.79 lb/gal RTU formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion preharvest use on sweet corn: (i) a maximum of five foliar applications per growing season of the 5 lb/gal EC formulation at 1.25 lb ai/A/application using ground equipment, with a 5-day retreatment interval and a 5-day PHI; and (ii) a maximum of five foliar applications per growing season of the 9.79 lb/gal RTU formulation at 0.61 lb ai/A/application using aerial ULV equipment, with a 5-day retreatment interval and a 5-day PHI.

74. The product labels for all pertinent EC and 9.79 lb/gal RTU formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion preharvest use on rice: (i) a maximum of three foliar applications per growing season of the 5 lb/gal EC formulation at 1.25 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 7-day PHI; and (ii) a maximum of three foliar applications per growing season of the 9.79 lb/gal RTU formulation at 0.61 lb ai/A/application using aerial ULV equipment, with a 7-day retreatment interval and a 14-day PHI. The use of 9.79 lb/gal RTU formulation on rice should be limited to rice grown in AR, LA and TX.

75. The product labels for all pertinent EC and 9.79 lb/gal RTU formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion preharvest use on sorghum: (i) a maximum of three foliar applications per growing season of the 5 lb/gal EC formulation at 1.25 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 7-day PHI; and (ii) a maximum of three foliar applications per growing season of the 9.79 lb/gal RTU formulation at 0.61 lb ai/A/application using aerial ULV equipment, with a 7-day retreatment interval and a 7-day PHI.

76. The product label for all pertinent EC and 9.79 lb/gal RTU formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion preharvest use on wheat: (i) a maximum of three foliar applications per growing season of the 5 lb/gal EC formulation at 1.25 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 7-day PHI; and (ii) a maximum of three foliar applications per growing season of the 9.79 lb/gal RTU formulation at 0.61 lb ai/A/application using aerial ULV equipment, with a 7-day retreatment interval and a 7-day PHI.

77. The available preharvest data pertaining to malathion residues of concern in/on rice grain may be translated to wild rice grain. Label revisions are required to make the use patterns for wild rice consistent with rice.

78. Adequate field trial data have been submitted for sweet corn forage but not for sweet corn stover. The available data for field corn stover may not be translated to sweet corn stover because the proposed use patterns are not identical for both types of corn. Therefore, the following are required: Data depicting residues of malathion and malaoxon in/on sweet corn stover harvested 5 days following the last of: (i) five foliar applications per growing season of the 5 lb/gal EC formulation at 1.25 lb ai/A/application using ground equipment, with a 5-day retreatment interval; and (ii) five foliar applications per growing season of the 9.79 lb/gal RTU formulation at 0.61 lb ai/A/application using aerial ULV equipment, with a 5-day retreatment interval. The number of field trials and geographic locations of trial sites should be in compliance with the current guidance.

79. The following are required: Data depicting residues of malathion and malaoxon in/on sorghum forage and stover harvested 7 days following the last of: (i) three foliar applications per growing season of the 5 lb/gal EC formulation at 1.25 lb ai/A/application using ground equipment, with a 7-day retreatment interval; and (ii) three foliar applications per growing season of the 9.79 lb/gal RTU formulation at 0.61 lb ai/A/application using aerial ULV equipment, with a 7-day retreatment interval. The number of field trials and geographic locations of trial sites should be in compliance with the current guidance.

Table B *(continued)*.

80. Adequate field trial data have been submitted for wheat forage and straw, but not for wheat hay. Therefore, the following data are required: Data depicting residues of malathion and malaoxon in/on wheat hay harvested 7 days following the last of: (i) three foliar applications per growing season of the 5 lb/gal EC formulation at 1.25 lb ai/A/application using ground equipment, with a 7-day retreatment interval; and (ii) three foliar applications per growing season of the 9.79 lb/gal RTU formulation at 0.61 lb ai/A/application using aerial ULV equipment, with a 7-day retreatment interval. The number of field trials and geographic locations of trial sites should be in compliance with the current guidance.

81. The product labels for all pertinent EC and 9.79 lb/gal RTU formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on pasture and rangeland grasses: (i) a maximum of one foliar application of the 5 lb/gal EC formulation at 1.25 lb ai/A using ground equipment with a 0-day PHI; and (ii) a maximum of one foliar application of the 9.79 lb/gal RTU formulation at 0.92 lb ai/A/application using aerial ULV equipment with a 0-day PHI.

82. The product labels for all pertinent EC and 9.79 lb/gal RTU formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on alfalfa: (i) a maximum of two foliar applications per cutting of the 5 lb/gal EC formulation at 1.25 lb ai/A/application in 30 gal/A using ground equipment, with a 14-day retreatment interval and a 0-day PHI; and (ii) a maximum of two foliar applications per cutting of the 9.79 lb/gal RTU formulation at 0.61 lb ai/A/application using aerial ULV equipment, with a 14-day retreatment interval and a 0-day PHI.

83. The product labels for all pertinent EC and 9.79 lb/gal RTU formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on clover: (i) a maximum of two foliar applications per cutting of the 5 lb/gal EC formulation at 1.25 lb ai/A/application using ground equipment, with a 14-day retreatment interval and a 0-day PHI; and (ii) a maximum of two foliar applications per cutting of the 9.79 lb/gal RTU formulation at 0.61 lb ai/A/application using aerial ULV equipment, with a 14-day retreatment interval and a 0-day PHI.

84. The available field trial data on alfalfa and clover will be translated to lespedeza forage and hay. All pertinent EC labels must be amended to ensure that the use patterns on lespedeza are consistent with those on alfalfa and clover. The established tolerance on lespedeza seed should be revoked as it is no longer considered a significant animal feed.

85. No data are required for lupine forage and hay as these are not considered to be significant sources of animal feed. The established tolerances on these commodities should be revoked.

86. The tolerance on alfalfa, which is supported by adequate field trial data, covers residues on trefoil also.

87. The available field trial data on alfalfa and clover will be translated to vetch forage and hay. All pertinent EC labels must be amended to ensure that the use patterns on vetch are consistent with those on alfalfa and clover. The established tolerance on vetch seed should be revoked as it is no longer considered a significant animal feed.

88. DP Barcode No. D242509; 4/24/98; M Xue.

89. The product label for all pertinent EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on avocados: a maximum of two foliar applications per growing season at 4.7 lb ai/A/application using ground equipment, with a 30-day retreatment interval and a 7-day PHI.

Table B *(continued)*.

90. The product labels for all pertinent EC, 4.1 lb/gal RTU, and 9.79 lb/gal RTU formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on cotton: (i) 25 foliar applications, with 3-day retreatment intervals, of the 5 lb/gal EC formulation at 2.5 lb ai/A/application in 30 gal/A using ground equipment; (ii) 25 foliar applications, with 3-day retreatment intervals, of the 4.1 lb/gal RTU formulation at 1.15 lb ai/A/application using aerial ULV equipment; and (iii) 25 foliar applications, with 3-day retreatment intervals, of the 9.79 lb/gal RTU formulation at 1.22 lb ai/A/application using aerial ULV equipment. The available data will support a 0-day PHI.

    Table 1 of OPPTS GLN 860.1000 recognizes cotton gin byproducts (commonly called gin trash) as a RAC of cotton; therefore, data depicting residues of malathion and malaoxon in/on cotton gin byproducts following applications of representative EC and RTU formulations according to the maximum proposed use patterns described above must be submitted. The number of field trials and geographic locations of trial sites should be in compliance with the current guidance.

91. Data have been submitted reflecting multiple applications of Dust formulations to Date trees. These data, which are under review, indicate that the present tolerance on dates will not be exceeded. The tolerance will be reassessed when it has been determined that adequate data have been submitted.

92. DP Barcode D209827, data under review.

93. DP Barcode D217170, K Dockter, 9/2/97.

94. The product label for all pertinent EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on fig: a maximum of three foliar applications per growing season at 2.5 lb ai/A/application using ground equipment, with a 5-day retreatment interval and a 5-day PHI.

95. The product label for all pertinent EC formulation must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on flax: a maximum of one foliar application per growing season at 0.5 lb ai/A using ground equipment, with a 52-day PHI. In the absence of field trial data reflecting use of a representative 9.79 lb/gal RTU formulation, the registered use of this formulation class on flax should be deleted from the label.

96. The product label for all pertinent EC formulation must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on grapes: a maximum of two foliar applications per growing season at 1.88 lb ai/A/application using ground equipment, with a 14-day retreatment interval and a 3-day PHI.

97. DP Barcodes D239267 and D239795, 1/27/98, W. Smith.

98. DP Barcode D190185; PP#3H5668; 2/4/94 and 5/3/93; R. Perfetti.

99. DP Barcode D243538, 6/5/98, M. Xue.

100. The product label for all pertinent EC formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on mint (peppermint and spearmint): a maximum of three foliar applications per growing season at 0.94 b ai/A/application using ground equipment, with a 7-day retreatment interval and a 7-day PHI.

101. All pertinent EC product labels must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on mushroom: a maximum of four applications per

growing season at 2 tbls of the formulated product/1,000 sq. ft of bed/application (equivalent to 1.7 lb ai/A/application), with a 3-day retreatment interval and a 1-day PHI.

102. All EC product labels must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on okra: a maximum of six foliar applications per growing season at 1.5 b ai/A/application using ground equipment, with a 7-day retreatment interval and a 1-day PHI.

103. DP Barcodes D239267 and D239795, 1/27/98, W. Smith.

104. DP Barcode D243539, 6/16/98, M. Xue.

105. DP Barcode D248548, 12/4/98, D. Soderberg.

106. Cheminova and IR-4 have separately submitted field trial data for malathion use on strawberry. The product labels for EC and WP formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on strawberries: a maximum of six foliar applications per growing season at 2.0 lb ai/A/application using ground equipment, with a 7-day retreatment interval and a 3-day PHI.

107. The product label for all pertinent EC formulation must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion use on field-grown watercress a maximum of five foliar applications per growing season at 1.25 lb ai/A/application using ground equipment, with a 3- to 7-day retreatment interval and a 3-day PHI.

108. Uses of malathion on tobacco are not being supported for reregistration; therefore, all pertinent product labels must be amended to remove any use directions for tobacco.

109. The available data pertaining to malathion residues of concern resulting from postharvest applications of EC and Dust formulations to wheat grain may be translated to barley grain, oat grain, and rye grain.

110. Uses of malathion on paper used in packaging non-medicated cattle feed concentrate blocks are not being supported for reregistration; therefore, all pertinent product labels must be amended to remove any uses on stored cattle feed concentrate blocks.

111. Uses of malathion on stored and bagged citrus pulp are not being supported for reregistration; therefore, all pertinent product labels must be amended to remove any uses for stored and bagged citrus pulp. The established tolerance for malathion residues on dehydrated citrus pulp as a result of uses on the stored and bagged commodity must be revoked.

112. Adequate field trial and processing data pertaining to malathion residues of concern in/on stored field corn grain resulting from postharvest applications of EC and Dust formulations have been submitted and evaluated. The stored field corn grain data may be translated to stored sorghum grain.

113. The product labels for all pertinent EC and Dust formulations must be modified as follows to reflect the parameters of use patterns for which adequate data are available for malathion postharvest use on stored corn and wheat grains: (i) residual spray application of the 5 lb/gal EC formulation to the inside surface of an empty storage bin at 20 lb ai/100 gal; (ii) application of the 6% D formulation to the surface of newly harvested grain during bin loading at 0.624 lb ai/1,000 bushels; and (iii) two additional applications of the 6% D formulation to the grain surface immediately after the bin was loaded and 60 days later at 0.312 lb ai/1,000 bushels/application.

Table B *(continued)*.

114. DP Barcode D216397, 5/6/98, M. Xue.

115. Uses of malathion on trays which are to be used for drying raisins are not being supported for reregistration; therefore, all pertinent product labels must be amended to remove any uses on raisin-drying trays and the established tolerance for raisins should be revoked.

116. Postharvest uses of malathion on stored rice grain are not being supported for reregistration; therefore, all pertinent product labels must be amended to remove any postharvest uses on rice. The established tolerance for malathion residues on rice will be reassessed based on preharvest field trial data.

117. Adequate data pertaining to malathion residues of concern in/on stored wheat grain resulting from postharvest applications have been submitted and evaluated.

118. The required processing data for stored wheat grain resulting from postharvest applications may be translated to processed commodities of barley, oats, and rye.

119. A new flax processing study utilizing exaggerated application rate (5x) is required. If the exaggerated field trial should result in non-quantifiable residues in/on the RAC, then the harvested RAC samples need not be processed, and a tolerance for flax meal will not be required. If the exaggerated rate should produce quantifiable residues in/on the RAC, then the harvested RAC samples should be processed and malathion residues of concern should be measured in flax meal.

120. An acceptable grape processing study reflecting preharvest treatment has been submitted and evaluated. Residues do not concentrate in juice or raisins.

121. An acceptable pineapple processing study has been evaluated. Residues concentrate in process residue but not in juice.

122. DP Barcode D212115, 9/30/97, W. Smith.

123. An acceptable rice processing study reflecting preharvest use has been submitted and evaluated. Postharvest use on stored rice grain is not being supported for reregistration; therefore, no further processing studies are required for rice.

124. A processing study is required depicting the potential for concentration of residues of malathion and malaoxon in bran, flour, germ, middlings, and shorts processed from postharvest-treated wheat grain according to the same treatment schedule that was used in the submitted field corn and wheat grain studies.

125. DP Barcode D211260, 7/13/98, M. Xue.

126. Malathion remains registered for use on aquatic areas (including intermittently flooded areas, stagnant water, and temporary rain pools). The nature and magnitude of residues of malathion in drinking and irrigated water resulting from aquatic uses have not been delineated. Therefore, the data requirements imposed in the Malathion Reregistration Standard for these guideline topics remain outstanding. In lieu of the required residue data, the registrant(s) may modify malathion use to allow broadcast use only over intermittently flooded areas, and that applications may not be made around bodies of water where fish or shellfish are grown and/or harvested commercially.

127. Malathion is not being supported under reregistration for use in food-handling establishments; therefore, no residue chemistry data are required under this guideline topic. All pertinent product labels must be admended to delete any reference to uses in food-handling establishments.

Table B *(continued)*.

128. DP Barcode D196880, 5/26/94, R. Perfetti.

129. The registrant had been requested to conduct limited field rotational crop studies. Rotational crop restrictions are needed on malathion end-use product labels. The appropriate plantback intervals will be determined pending submission of the required field rotational crop studies.

TOLERANCE REASSESSMENT SUMMARY

Tolerances for residues of malathion in/on plant and animal commodities [40 CFR §180.111], food commodities [40 CFR §185.3850, §185.7000], and feed commodities [40 CFR §186.3850] are currently expressed in terms of malathion *per se*.

The tolerance expression for plant commodities needs to be revised in order to reflect the HED Metabolism Committee's determination that the residues of concern are malathion [*O,O*-dimethyl dithiophosphate of diethyl mercaptosuccinate] and its metabolite malaoxon [*O,O*-dimethyl thiophosphate of diethyl mercaptosuccinate].

The established tolerances for animal commodities may be revoked if the direct animal treatment uses of malathion to poultry and livestock animals are canceled. Since neither malathion nor malaoxon were observed in eggs, milk, and animal tissues, there is no need for tolerances in these commodities based on dietary exposure to malathion.

The Agency has recently updated the list of raw agricultural and processed commodities and feedstuffs derived from crops (Table 1, OPPTS GLN 860.1000). As a result of changes to Table 1, malathion tolerances for certain RACs which have been removed from the livestock feeds table need to be revoked. Also, some commodity definitions must be corrected. A summary of malathion tolerance reassessments is presented in Table C.

Tolerances Listed Under 40 CFR §180.111:

Sufficient data have been submitted (or were translated when appropriate) to reassess the established tolerances for the following commodities, pending label amendments for some crops: alfalfa (PRE-H); apricots (PRE-H); asparagus (PRE-H); avocados (PRE-H); barley, grain (PRE- and POST-H); beans (PRE-H); beets (including tops) (PRE-H); Birdsfoot trefoil, forage (PRE-H); Birdsfoot trefoil, hay (PRE-H); blackberries (PRE-H); blueberries (PRE-H); boysenberries (PRE-H); carrots (PRE-H); chayote fruit; chayote roots; cherries (PRE-H); chestnuts (PRE-H); clover (PRE-H); corn, forage (PRE-H); corn, fresh (including sweet K + CWHR) (PRE-H); corn, grain (POST-H); cottonseed (PRE-H); cucumbers (PRE-H);currants (PRE-H); dewberries (PRE-H); eggplants (PRE-H); figs (PRE-H); flax seed; garlic (PRE-H); grapefruit (PRE-H); gooseberries (PRE-H); grapes (PRE-H); grass (PRE-H); grass, hay (PRE-H); guavas (PRE-H); hops (PRE-H); horseradish (PRE-H); kumquats (PRE-H); leeks (PRE-H); lemons (PRE-H); lespedeza, hay (PRE-H); lespedeza, straw (PRE-H); limes (PRE-H); loganberries (PRE-H); lupine, seed (PRE-H); macadamia nuts (PRE-H); mangos (PRE-H); melons (PRE-H); mushrooms (PRE-H); nectarines (PRE-H); oats, grain (PRE- and POST-H); okra (PRE-H); onions (including green onions) (PRE-H); oranges (PRE-H); papayas (PRE-H); parsnips (PRE-H); passion fruit (PRE-H); peaches (PRE-H); pears (PRE-H); peas (PRE-H); pecans (PRE-H); peppermint (PRE-H); peppers (PRE-H); pineapples (PRE-H); potatoes (PRE-H); pumpkins (PRE-H); radishes (PRE-H); raspberries (PRE-H); rice, grain (PRE-H); rice, wild; rutabagas (PRE-H); rye, grain (PRE- and POST-H); salsify (including tops) (PRE-H); shallots (PRE-H); sorghum, grain (PRE-

and POST-H); spearmint (PRE-H); squash, summer and winter (PRE-H); strawberries (PRE-H); sweet potatoes (PRE-H); tangerines (PRE-H); tomatoes (PRE-H); turnips (including tops) (PRE-H); vegetables, leafy, *Brassica* (cole); vetch, hay (PRE-H); vetch, straw (PRE-H); walnuts (PRE-H) and wheat, grain (PRE- and POST-H).

Insufficient data are available to reassess the established tolerances for the following commodities: apples (PRE-H); dates (PRE-H); quinces (PRE-H); sorghum, forage (PRE-H); and vegetables, leafy (except *Brassica*).

No registrants have committed to support malathion uses on any greenhouse-grown crops. Therefore, the registered greenhouse uses of malathion on cucumber, endive, lettuce, radish, tomato, and watercress should be deleted from all malathion end-use product labels. The reassessment of tolerances will be conducted with the assumption that only field-grown cucumber, endive, lettuce, radish, tomato, and watercress will be supported for reregistration.

Due to a lack of support for reregistration, the established tolerances for the following commodities should be revoked concomitant with the deletion of respective crops from all malathion product labels: almond hulls (PRE-H); almonds (PRE- and POST-H); almonds, shells; beets, sugar, roots (PRE-H); beets, sugar, tops (PRE-H); cowpea, forage (PRE-H); cowpea, hay (PRE-H); cranberries (PRE-H); filberts (PRE-H); lentils (PRE-H); peanut, forage (PRE-H); peanut, hay (PRE-H); peanuts (PRE- and POST-H); peavine, hay (PRE-H); peavines (PRE-H); plums (PRE-H); prunes (PRE-H); safflower, seed (PRE-H); soybeans (dry and succulent) (PRE-H); soybean, forage (PRE-H); soybean, hay (PRE-H); sunflower seeds (POST-H);.

The tolerances for the following commodities should be revoked because they are no longer considered significant livestock feed items and have been deleted from Table 1 (OPPTS GLN 860.1000): flax straw; lespedeza, seed (PRE-H); lupine, hay (PRE-H); lupine, straw (PRE-H); and vetch, seed (PRE-H).

The tolerances for the following animal commodities may be revoked if the direct animal treatment uses of malathion to poultry and livestock animals are canceled: cattle, fat (PRE-S); cattle, mbyp (PRE-S); cattle, meat (PRE-S); eggs (from application to poultry; goats, fat (PRE-S); goats mbyp (PRE-S); goats, meat (PRE-S); hogs, fat (PRE-S); hogs mbyp (PRE-S); hogs, meat (PRE-S); horses, fat (PRE-S); horses, mbyp (PRE-S); horses, meat (PRE-S); milk, fat (from application to dairy cows); poultry, fat (PRE-S); poultry, mbyp (PRE-S); poultry, meat (PRE-S); sheep, fat (PRE-S); sheep, mbyp (PRE-S); and sheep, meat (PRE-S).

<u>Tolerances To Be Proposed Under 40 CFR §180.111:</u>

Tolerances are required and must be proposed, based on available field trial data, for the following RACs: aspirated grain fractions; barley, straw; corn, field, stover; oats, forage; oats, straw; radish tops; rice, straw; rye, forage; rye, straw; watercress; wheat, forage; and wheat, straw. Tolerances are required and must be proposed for the following RACs after adequate data

have been submitted and evaluated: barley, hay; stover; corn, sweet, stover; cotton, gin byproducts; oats, hay; sorghum, stover; and wheat, hay.

Tolerances need to be proposed on certain processed commodities which showed significant concentration of residues based on the results of acceptable processing studies. The results of processing studies which trigger the need for tolerances for the combined residues of malathion and malaoxon are briefly presented below.

The processing data for apple indicate that the combined residues of malathion and malaoxon concentrated 3.8x in wet pomace, but did not concentrate in apple juice processed from apples bearing detectable residues of malathion. A tolerance for apple wet pomace needs to be proposed once adequate field trial data are available for reassessment of the established tolerance on apples.

The processing data for preharvest-treated field corn grain indicate that the combined residues of malathion and malaoxon did not concentrate above the limit of detection (0.01 ppm) in starch, grits, meal, flour, dry- and wet-milled crude oil, dry- and wet-milled refined oil, and dry- and wet-milled bleached and deodorized oil processed from field corn grain bearing nondetectable residues of malathion and malaoxon (<0.01 ppm each) following three preharvest foliar treatments at 5x the maximum single application rate.

The processing data for postharvest-treated field corn grain indicate that the combined residues of malathion and malaoxon concentrated 1.8x in meal and 2.0x in flour processed from field corn grain bearing detectable combined residues of malathion and malaoxon following a series of postharvest treatments according to the use pattern the registrant wishes to support. The combined residues did not concentrate in grits, starch and dry- and wet-milled bleached and deodorized oil. The HAFT (combined residues) from trials reflecting postharvest treatment is 6.79 ppm. Based on this HAFT and the observed concentration factors, the maximum expected combined residues are 12.2 ppm for meal (6.79 x 1.8) and 13.6 ppm for flour (6.79 x 2.0). These maximum expected combined residues are higher than the reassessed tolerance of 8.0 ppm for field corn grain. Therefore, tolerances for the combined residues of malathion and malaoxon in corn meal and flour at 14.0 ppm must be proposed. Since residues did not concentrate in dry- and wet-milled bleached and deodorized oil, a tolerance for this commodity need not be proposed.

The available data for stored field corn processed commodities may be translated to stored sorghum processed commodities. A tolerance for the combined residues of malathion and malaoxon in/on sorghum flour need not be established at this time since sorghum flour is used exclusively in the United States as a component for drywall, and not as either a human food or a feedstuff.

The processing data for fig indicate that the combined residues of malathion and malaoxon concentrated 2.9x in dried fig processed from fresh fig bearing detectable residues and treated at 1x. A tolerance of 2 ppm should be appropriate for dried fig based on the concentration factor and the highest average field trial.

The mint processing data indicate that the combined residues of malathion and malaoxon concentrated up to 12.7x in mint oil processed from mint tops bearing detectable residues following applications at 5x. The HAFT (combined residues) from mint field trials reflecting the maximum proposed use pattern is 1.1 ppm. Based on this HAFT and the observed concentration factor, the maximum expected combined residues are 13.97 ppm for mint oil. These maximum expected combined residues are higher that the reassessed tolerance of 2.0 ppm for peppermint and spearmint tops. Therefore, tolerances for the combined residues of malathion and malaoxon in peppermint and spearmint at 15.0 ppm must be proposed.

The processing data for preharvest-treated oranges indicate that the combined residues of malathion and malaoxon concentrated in oil (>208x) and dried pulp (9.5x) but reduced in juice (<0.1x) following processing of oranges bearing detectable residues. Based on the results of this study, and a HAFT of 1.9 ppm, a tolerance of 400 ppm must be proposed for citrus oil and a tolerance of 200 ppm must be proposed for citrus dried pulp.

The processing data submitted for cottonseed, potatoes, and tomatoes indicate that the combined residues of malathion and malaoxon did not concentrate in the respective processed commodities; therefore tolerances are not required for the processed commodities of these crops. Additional processing studies remain outstanding for flax and postharvest-treated wheat.

Tolerances Listed Under 40 CFR §185.3850:

The established tolerance for raisins resulting from drying of grapes on treated trays should be revoked since adequate supporting data are not available and this use is not being supported for reregistration. An acceptable grape processing study reflecting preharvest treatment has been submitted and evaluated. The grape processing data indicate that the combined residues of malathion and malaoxon did not concentrate in raisin and juice processed from grapes bearing detectable residues following treatment with the 5 lb/gal EC formulation at 5x the maximum single application rate.

The established tolerance for refined safflower oil should be revoked since no registrants have committed to support malathion use on safflower.

Tolerances Listed Under 40 CFR §185.7000:

The conditions listed in 40 CFR §185.7000 allowing malathion use for the control of insects during the drying of grapes (raisins) should be deleted unless the registrant(s) submits supporting data.

Tolerances Listed Under 40 CFR §186.3850:

Insufficient residue data are available to reassess the tolerances for the following commodities: dehydrated citrus pulp (for cattle feed) and non-medicated cattle feed concentrate blocks.

Pending Tolerance Petitions:

PP#9E3781: IR-4 and the Agricultural Experiment Station of FL proposed the establishment of a tolerance for the combined residues of malathion and malaoxon in/on sugar apple (atemoya) at 0.5 ppm. HED has recommended for the establishment of the proposed tolerance (DP Barcode D220927, 5/28/96, M. Rodriguez).

Table C. Tolerance Reassessment Summary for Malathion.

Commodity	Tolerance Listed Under 40 CFR §180.111	Reassessed Tolerance [2]	Comment *[Correct Commodity Definition]*
Tolerance Listed Under 40 CFR §180.111			
Alfalfa (PRE-H)	135	125	[*Alfalfa, forage*]
		185	[*Alfalfa, hay*]
Almond hulls (PRE-H)	50	Revoke	Not supported under reregistration
Almonds (PRE- and POST-H)	8	Revoke	Not supported under reregistration
Almonds, shells	50	Revoke	Not supported under reregistration
Apples (PRE-H)	8	TBD [3]	[*Apple*] Additional apple field trial data are required.
Apricots (PRE-H)	8	1.0	[*Apricot*]
Asparagus (PRE-H)	8	2.0	[*Asparagus*]
Avocados (PRE-H)	8	0.2	[*Avocado*]
Barley, grain (PRE- and POST-H)	8	8.0	[*Barley, grain (PRE- and POST-H)*] Translated from wheat data.
Beans (PRE-H)	8	2.0	[*Bean, dry*]
		2.0	[*Bean, succulent*]
Beets (including tops)(PRE-H)	8	4.0	[*Beet, garden, tops*] translated from turnip tops data.
		0.5	[*Beet, garden, roots*] Translated from turnip root data.
Beets, sugar, roots (PRE-H)	1	Revoke	Not supported under reregistration
Beets, sugar, tops (PRE-H)	8	Revoke	Not supported under reregistration
Birdsfoot trefoil, forage (PRE-H)	135	125	*[trefoil, forage]* Translate alfalfa and clover data.
Birdsfoot trefoil, hay (PRE-H)	135	185	*[trefoil, hay]* Translate alfalfa and clover data.
Blackberries (PRE-H)	8	6	[*Blackberry*]
Blueberries (PRE-H)	8	8	[*Blueberry*]
Boysenberries (PRE-H)	8	6.0	[*Boysenberry*] Translated from blackberry and raspberry data.
Carrots (PRE-H)	8	1	[*Carrot*]
Cattle, fat (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Cattle, mbyp [4] (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Cattle, meat [4] (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Chayote fruit	8	0.2	Translated cucumber data.

(continued; footnotes follow)

Table C *(continued)*.

Commodity	Tolerance Listed Under 40 CFR §180.111	Reassessed Tolerance [2]	Comment *[Correct Commodity Definition]*
Chayote roots	8	0.1	Translated potato data.
Cherries (PRE-H)	8	3.0	[*Cherry*]
Chestnuts (PRE-H)	1	1.0	[Chestnut]
Clover (PRE-H)	135	125	[*Clover, forage*]
		125	[*Clover, hay*]
Corn, forage (PRE-H)	8	5.0	[*Corn, field, forage*]
		45.0	[*Corn, sweet, forage*]
Corn, fresh (including sweet K + CWHR) (PRE-H)	2	0.1	[*Corn, sweet (K + CWHR)*]
Corn, grain (POST-H)	8	8.0	[*Corn, field, grain (PRE- and POST-H)*]
Cottonseed (PRE-H)	2	20	[*Cotton, undelinted seed*]
Cowpea, forage (PRE-H)	135	Revoke	Not supported under reregistration
Cowpea, hay (PRE-H)	135	Revoke	Not supported under reregistration
Cranberries (PRE-H)	8	Revoke	Not supported under reregistration
Cucumbers (PRE-H)	8	0.2	[*Cucumber*]
Currants (PRE-H)	8	8.0	[*Currant*] Translated from blueberry data.
Dates (PRE-H)	8	TBD	Further data required (data under review)
Dewberries (PRE-H)	8	6.0	[*Dewberry*] Translated from blackberry data.
Eggplants (PRE-H)	8	2.0	[*Eggplant*] Translated from tomato data.
Eggs (from application to poultry)	0.1	Revoke	Contingent upon cancellation of direct animal treatment uses.
Figs (PRE-H)	8	1.0	[*Fig*]
Filberts (PRE-H)	1	Revoke	Not supported under reregistration
Flax seed	0.1	0.10	[*Flax, seed*]
Flax straw	1	Revoke	Not a significant RAC of flax.
Garlic (PRE-H)	8	1.0	[*Garlic*] Translated from onion bulb data.
Goats, fat (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Goats, mbyp [4] (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Goats, meat [4] (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.

(continued; footnotes follow)

Table C *(continued)*.

Commodity	Tolerance Listed Under 40 CFR §180.111	Reassessed Tolerance [2]	Comment *[Correct Commodity Definition]*
Gooseberries (PRE-H)	8	6.0	[*Gooseberry*] Translated from blackberry and raspberry data.
Grapefruit (PRE-H)	8	4.0	[*Grapefruit*] Translated from orange data.
Grapes (PRE-H)	8	4.0	[*Grape*]
Grass, (PRE-H)	135	200	[*Grass, forage*]
Grass, hay (PRE-H)	135	270	[*Grass, hay*]
Guavas (PRE-H)	8	1.0	[*Guava*]
Hogs, fat (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Hogs, mbyp [4] (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Hogs, meat [4] (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Hops (PRE-H)	1	1.0	[*Hops, dried*]
Horseradish (PRE-H)	8	0.5	[*Horseradish*] Translated from turnip root data.
Horses, fat (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Horses, mbyp [4] (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Horses, meat [4] (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Kumquats (PRE-H)	8	4.0	[*Kumquat*] Translated from orange data.
Leeks (PRE-H)	8	6	[*Leek*] Translated from green onion data.
Lemons (PRE-H)	8	4.0	[*Lemon*] Translated from orange data.
Lentils (PRE-H)	8	Revoke	Not supported under reregistration
Lespedeza, hay (PRE-H)	135	185	Translated from alfalfa hay data.
Lespedeza, seed (PRE-H)	8	Revoke	Not a significant RAC of lespedeza
Lespedeza, straw (PRE-H)	135	Revoke	Not a significant RAC of lespedeza
Limes (PRE-H)	8	4.0	[*Lime*] Translated from orange data.
Loganberries (PRE-H)	8	6.0	[*Loganberry*] Translated from blackberry and raspberry data.
Lupine, hay (PRE-H)	135	Revoke	Not a significant RAC of lupine
Lupine, seed (PRE-H)	8	2.0	Translated from dry beans data
Lupine, straw (PRE-H)	135	Revoke	Not a significant RAC of lupine

(continued; footnotes follow)

Table C *(continued)*.

Commodity	Tolerance Listed Under 40 CFR §180.111	Reassessed Tolerance [2]	Comment *[Correct Commodity Definition]*
Macadamia nuts (PRE-H)	1	0.2	[*Macadamia nut*]
Mangos (PRE-H)	8	0.2	[*Mango*]
Melons (PRE-H)	8	1.0	[*Melon*]
Milk, fat (from application to dairy cows)	0.5	Revoke	Contingent upon cancellation of direct animal treatment uses.
Mushrooms (PRE-H)	8	0.2	[*Mushroom*]
Nectarines (PRE-H)	8	1.0	[*Nectarine*] Translated from apricot data.
Oats, grain (PRE- and POST-H)	8	8.0	[*Oats, grain (PRE- and POST-H)*] Translated from wheat grain data.
Okra (PRE-H)	8	3.0	[*Okra*]
Onions (including green onions) (PRE-H)	8	1.0	[*Onion, bulb*]
		6.0	[*Onion, green*]
Oranges (PRE-H)	8	4.0	[*Orange*]
Papayas (PRE-H)	1	1	[*Papaya*]
Parsnips (PRE-H)	8	0.5	[*Parsnip*] Translated from turnip root data.
Passion fruit (PRE-H)	8	0.2	[*Passion fruit*]
Peaches (PRE-H)	8	6.0	[*Peach*]
Peanut, forage (PRE-H)	135	Revoke	Not supported under reregistration
Peanut, hay (PRE-H)	135	Revoke	Not supported under reregistration
Peanuts (PRE- and POST-H)	8	Revoke	Not supported under reregistration
Pears (PRE-H)	8	3.0	[Pear]
Peas (PRE-H)	8	2.0	[*Pea, succulent*] Dry peas not being supported under reregistration.
Peavine, hay (PRE-H)	8	Revoke	Not supported under reregistration
Peavines (PRE-H)	8	Revoke	Not supported under reregistration
Pecans (PRE-H)	8	0.20	[*Pecan*] Translated from walnut data.
Peppermint (PRE-H)	8	2.0	[*Peppermint*]
Peppers (PRE-H)	8	0.5	[*Pepper*]
Pineapples (PRE-H)	8	0.2	[*Pineapple*]
Plums (PRE-H)	8	Revoke	Not supported under reregistration
Potatoes (PRE-H)	8	0.1	[*Potato*]
Poultry, fat (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Poultry, mbyp [4] (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.

(continued; footnotes follow)

Table C *(continued)*.

Commodity	Tolerance Listed Under 40 CFR §180.111	Reassessed Tolerance [2]	Comment *[Correct Commodity Definition]*
Poultry, meat [4] (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Prunes (PRE-H)	8	Revoke	Not supported under reregistration.
Pumpkins (PRE-H)	8	1.0	[*Pumpkin*]Translated from melon data.
Quinces (PRE-H)	8	TBD	[*Quince*] Translate from apple data. Further apple data required.
Radishes (PRE-H)	8	0.5	[*Radish*] Translated from turnip root data.
Raspberries (PRE-H)	8	6.0	[*Raspberry*]
Rice, grain (PRE- and POST-H)	8	30	[*Rice, grain (PRE-H)*] Postharvest use on rice not supported under reregistration.
Rice, wild	8	30	[*Rice, wild*] Translated from rice grain data.
Rutabagas (PRE-H)	8	0.5	[*Rutabaga*] Translated from turnip root data.
Rye, grain (PRE- and POST-H)	8	8.0	[*Rye, grain (PRE- and POST-H)*] Translated from wheat grain data.
Safflower, seed (PRE-H)	0.2	Revoke	Not supported under reregistration
Salsify (including tops) (PRE-H)	8	4.0	*[Salsify, tops (leaves)]* Translated from turnip tops data.
		0.5	*[Salsify, root]* Translated from turnip root data.
Shallots (PRE-H)	8	6.0	[*Shallot*]Translated from green onion data.
Sheep, fat (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Sheep, mbyp [4] (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Sheep, meat [4] (PRE-S)	4	Revoke	Contingent upon cancellation of direct animal treatment uses.
Sorghum, forage (PRE-H)	8	TBD	[*Sorghum, forage*] Additional data are required.
Sorghum, grain (PRE- and POST-H)	8	8.0	[*Sorghum, grain (PRE- and POST-H)*] Postharvest data translated from field corn grain data.
Soybeans (dry and succulent) (PRE-H)	8	Revoke	Not supported under reregistration
Soybeans, forage (PRE-H)	135	Revoke	Not supported under reregistration
Soybeans, hay (PRE-H)	135	Revoke	Not supported under reregistration

(continued; footnotes follow)

Table C *(continued)*.

Commodity	Tolerance Listed Under 40 CFR §180.111	Reassessed Tolerance [2]	Comment *[Correct Commodity Definition]*
Spearmint (PRE-H)	8	2.0	[*Spearmint*]
Squash, summer and winter (PRE-H)	8	0.2	[*Squash, summer*] Translated from cucumber data.
		1.0	[*Squash, winter*] Translated from winter squash data.
Strawberries (PRE-H)	8	1	[*Strawberry*]
Sunflower seeds (POST-H)	8	Revoke	Not supported under reregistration
Sweet potatoes (PRE-H)	1	0.1	[*Sweet potato*] Translated from potato data.
Tangerines (PRE-H)	8	4.0	[*Tangerine*] Translated from orange data.
Tomatoes (PRE-H)	8	2.0	[*Tomato*]
Turnips (including tops) (PRE-H)	8	4.0	[*Turnip, tops*]
		0.5	[*Turnip, roots*]
Vegetables, leafy, *Brassica* (cole)	8	8.0	[*Brassica (cole) leafy vegetables group*]
Vegetables, leafy (except *Brassica*)	8	TBD	[*Leafy vegetables (except Brassica vegetables) group*] Further data required on representative commodity, celery.
Vetch, hay (PRE-H)	135	185	Based on alfalfa data
Vetch, seed (PRE-H)	8	Revoke	Not a RAC of vetch
Vetch, straw (PRE-H)	135	Revoke	Not a RAC of vetch
Walnuts (PRE-H)	8	0.2	[*Walnut*]
Wheat, grain (PRE- and POST-H)	8	8	[*Wheat, grain (PRE- and POST-H)*]
Tolerance To Be Proposed Under 40 CFR §180.111			
Apple, pomace, wet	None	TBD	Level will be determined when RAC tolerance reassessed. Further data are required on RAC.
Aspirated grain fractions	None	700	Based on postharvest treated corn grain; the highest value measured in aspirated grain fractions.
Barley, hay	None	TBD	Translate from wheat hay data when adequate data have been reviewed.
Barley, straw	None	50	Translated from wheat straw data.
Citrus, pulp, dried	None	20	
Citrus, oil	None	400	
Corn, field, stover	None	30.0	

(continued; footnotes follow)

Table C *(continued)*.

Commodity	Tolerance Listed Under 40 CFR §180.111	Reassessed Tolerance [2]	Comment *[Correct Commodity Definition]*
Corn, sweet, stover	None	TBD	Sweet corn stover data are required.
Corn, flour	None	14.0	
Corn, meal	None	14.0	
Cotton, gin byproducts	None	TBD	Cotton gin byproducts data required.
Fig, dried	None	2.0	
Lespedeza, forage	None	125	Translated from alfalfa and clover data.
Oats, forage	None	4.0	Translated from wheat forage data.
Oats, hay	None	TBD	Translate from wheat hay data when adequate data reviewed.
Oats, straw	None	50	Translated from wheat straw data.
Pineapple, process residue	None	0.40	
Peppermint, oil	None	15.0	
Radish, tops	None	4.0	Translated from turnip tops data
Rice, hulls	None	150	
Rice, straw	None	60	
Rye, forage	None	4.0	Translated from wheat forage data.
Rye, straw	None	50	Translated from wheat straw data.
Sorghum, stover	None	TBD	
Spearmint, oil	None	15.0	
Vetch, forage	None	125	Translated from alfalfa and clover data
Watercress	None	0.2	
Wheat, forage	None	4.0	
Wheat, hay	None	TBD	Field trial data are required for wheat hay.
Wheat, straw	None	50	
Tolerances Listed Under 40 CFR §185.3850			
Raisins	12	Revoke	Not supported under reregistration
Safflower, refined oil	0.6	Revoke	Not supported under reregistration
Tolerances Listed Under 40 CFR §185.7000			
Raisins	12	Revoke	Not supported under reregistration
Tolerances Listed Under 40 CFR §186. 3850			
Dehydrated citrus pulp [post-H]	50	Revoke	Not supported under reregistration
Non-medicated cattle feed concentrate blocks.	10	Revoke	Not supported under reregistration

(continued; footnotes follow)

[1] Maximum residue of treated RAC sample(s) following application of malathion formulation according to the maximum use patterns the registrant(s) wishes to support for reregistration.

[2] The reassessed tolerances are contingent upon the recommended label revisions outlined in Table B.

[3] TBD = To be determined. Reassessment of tolerance(s) cannot be made at this time because additional data are required.

[4] The tolerance level shall not be exceeded in any cut of meat or in any meat byproduct from cattle, goats, hogs, horses, poultry, or sheep.

CODEX HARMONIZATION

The Codex Alimentarius Commission has established several maximum residue limits (MRLs) for residues of malathion in/on various raw agricultural and processed commodities. The Codex MRLs are expressed in terms of malathion *per se*. The Codex MRLs and the U.S. tolerances will be incompatible when the U.S. tolerance expression for plant commodities is revised to include both residues of malathion and the metabolite malaoxon.. A numerical comparison of the Codex MRLs and the corresponding **reassessed** U.S. tolerances is presented in Table D.

Table D. Codex MRLs and applicable U.S. tolerances for malathion. Recommendations are based on conclusions following reassessment of U.S. tolerances (see Table C).

Codex			Reassessed U.S. Tolerance, ppm
Commodity, As Defined	MRL (mg/kg)	Step	
Apple	2.0	CXL	TBD [1]
Beans (dry)	8.0 Po [2]	CXL	2.0
Blackberries	8.0	CXL	6.0
Blueberries	0.5	CXL	8.0
Broccoli	5.0	CXL	8.0
Cabbages, Head	8.0	CXL	8.0
Cauliflower	0.5	CXL	8.0
Celery	1.0	CXL	TBD
Cereal grains	8.0 Po [2]	CXL	Corn (field), sorghum, barley, oats, rye, and wheat grains = 8.0 (POST-H)
Chard	0.5	CXL	TBD
Cherries	6.0	CXL	3.0
Citrus fruits	4.0	CXL	4.0
Common bean (pods and/or immature seeds)	2.0	CXL	2.0
Dried fruits	8.0	CXL	--
Egg plant	0.5	CXL	2.0
Endive	8.0	CXL	TBD
Grapes	8.0	CXL	4.0
Kale	3.0	CXL	TBD
Kohlrabi	0.5	CXL	TBD
Lentil (dry)	8.0	CXL	Revoke
Lettuce, Head	8.0	CXL	TBD

(*continued; footnotes follow*)

Table D (*continued*).

Codex			Reassessed U.S. Tolerance, ppm
Commodity, As Defined	MRL (mg/kg)	Step	
Nuts (whole in shell)	8.0	CXL	--
Peach	6.0	CXL	6.0
Pear	0.5	CXL	3.0
Peas (pods and succulent=immature seeds)	0.5	CXL	2.0
Peppers	0.5	CXL	0.5
Plums (including prunes)	6.0	CXL	Revoke
Raspberries, Red, Black	8.0	CXL	6
Root and tuber vegetables	0.5 [3]	CXL	Potato, Sweet potato,beet, garden, roots; carrots; horseradish; parsnip; radish; rutabaga; and turnip = 0.1
Rye bran, Unprocessed	20.0 PoP [4]	CXL	--
Rye flour	2.0 PoP [4]	CXL	--
Rye wholemeal	2.0 PoP [4]	CXL	--
Spinach	8.0	CXL	TBD
Strawberry	1.0	CXL	1.0
Tomato	3.0	CXL	2.0
Turnip, Garden	3.0	CXL	4 tops 0.5 roots
Wheat bran, Unprocessed	20.0 PoP [4]	CXL	--
Wheat flour	2.0 PoP [4]	CXL	--
Wheat wholemeal	2.0 PoP [4]	CXL	--

[1] TBD = To be determined; residue data remain outstanding.
[2] Po = Postharvest treatment of the commodity.
[3] (Except Turnip, Garden)
[4] PoP = Postharvest treatment of the primary food crop.

DIETARY EXPOSURE ASSESSMENT

Anticipated residues of malathion in food commodities will be assessed in a separate memorandum.

AGENCY MEMORANDA RELEVANT TO REREGISTRATION

CBRS No.:	7225
DP Barcode:	None
Subject:	Malathion
From:	D. McNeilly
To:	L. Rossi
Dated:	12/30/90
MRID:	None

CBRS No.:	None
DP Barcode:	None
Subject:	September 6, 1991 Conference with Malathion Reregistration Coalition Representatives to Discuss Reregistration Data Requirements for Malathion.
From:	P. Deschamp
To:	Chemistry Branch Files
Dated:	9/25/91
MRID(s):	None assigned

CBRS No.:	None
DP Barcode:	None
Subject:	September 6, 1991 Conference with Malathion Reregistration Coalition Representatives to Discuss Reregistration Data Requirements for Malathion
From:	P. Deschamp
To:	Chemistry Branch Files
Dated:	9/25/91
MRID:	None

DP Barcode:	D169848
Subject:	Response to the Malathion Reregistration Standard: Interim Metabolism Studies
From:	R. Perfetti
To:	W. Burnam and L. Rossi
Dated:	10/29/91
MRID:	None

CBRS No.: None
DP Barcode: None
Subject: To Be Presented To The Metabolism Committee At The Meeting Of February 12, 1992: Malathion Plant Metabolism
From: R. Perfetti
To: The Metabolism Committee
Dated: 1/28/92
MRID: None

CBRS No.: None
DP Barcode: None
Subject: The Metabolism Committee Meeting for Malathion Held on February 12, 1992
From: R. Perfetti
To: The Metabolism Committee
Dated: 2/14/92
MRID: None

CBRS No.: None
DP Barcode: None
Subject: Malathion Reregistration: Crop Field Trials and The Terminal Residue
From: R. Perfetti
To: W. Burnam and L. Rossi
Dated: 2/18/92
MRID: None

DP Barcodes: D173841
Subject: Chemical Producers and Distributors Association Protocol for Magnitude of the Residue Field Trials on Apples and Melons
From: C. Swartz
To: J. Ellenberger and J. Edwards
Dated: 3/26/92
MRIDs: None

DP Barcode: D178475
Subject: Malathion Reregistration: The Residue to be Regulated
From: R. Perfetti
To: W. Burnam and L. Rossi
Dated: 6/16/92
MRID: None

CBRS No.: None
DP Barcode: None
Subject: Addendum to the Metabolism Committee Meeting for Malathion Held on July 2, 1992
From: R. Perfetti
To: The Metabolism Committee
Dated: 7/15/92
MRID: None

DP Barcode: D178988
Subject: A/S Cheminova: Response to the Malathion Reregistration Standard: Residue Chemistry
From: R. Perfetti
To: E. Saito and L. Rossi
Dated: 7/30/92
MRID: 42317401

Subject: Request for Formal OGC Position Regarding Legal Issues Pertaining to Homeowner Use of Malathion on Apples
From: C. Swartz
To: J. Fleuchaus
Dated: 8/7/92
MRID: None

DP Barcodes: D182668 and D183109
Subject: Response to the Malathion Reregistration Standard: Residue Chemistry
From: R. Perfetti
To: E. Saito and L. Rossi
Dated: 10/20/92
MRID: None

DP Barcode: D181795

Subject:	Protocol for Residue Studies of Malathion on Dates; Also a Time Extension Request for the Field Residue Studies of Malathion 5% Dust Insecticides on Dates
From:	F. Toghrol
To:	L. Rossi/L. Propst
Dated:	12/23/92
MRID(s):	None

Subject:	A/S Cheminova: Response to the Malathion Reregistration Standard
From:	R. Perfetti
To:	E. Saito and L. Rossi
Dated:	12/30/92
MRID(s):	42482601

DP Barcode:	D182765
Subject:	Malathion. List A Reregistration Case No. 0248/Chemical ID No. 057701. HED/CBRS Response Regarding Tolerance/Data Requirements to Support the Homeowner Use on Apples; Acceptability of the use of Cucumber and Melon Data to Support Squash.
From:	C. Swartz
To:	L. Rossi
Dated:	1/15/93
MRID(s):	None

DP Barcode:	D185199
Subject:	Response to the Malathion Reregistration Standard: Residue Chemistry
From:	R. Perfetti
To:	L. Rossi and E. Saito
Dated:	3/2/93
MRID:	42538901

DP Barcode:	D187921
Subject:	Platte Response to CBRS' Protocol Review. Field Trials for Malathion on Dates
From:	F. Toghrol
To:	L. Rossi/L. Propst
Dated:	3/8/93
MRID(s):	None

DP Barcode: D187727
Subject: Malathion: Protocol for Stored Grain and Grain Dust Residue Studies and Corn Processing Study.
From: D. McNeilly
To: P. Perreault
Dated: 4/15/93
MRID(s): None

DP Barcode: D187719
Subject: A/S Cheminova: Response to the Malathion Reregistration Standard: Cotton Metabolism
From: R. Perfetti
To: E. Saito and L. Rossi
Dated: 4/19/93
MRID: 42583401

DP Barcode: D187721
Subject: A/S Cheminova: Response to the Malathion Reregistration Standard: Residue Chemistry
From: R. Perfetti
To: E. Saito and L. Rossi
Dated: 4/21/93
MRID: None

DP Barcode: D190185
Subject: PP#3H5668. Malathion on Dried and Spent Hops. Evaluation of Residue Chemistry Data Requirements
From: R. Perfetti
To: H. Jamerson
Dated: 5/3/93
MRID: None

DP Barcode: D187715
Subject: Response to the Malathion Reregistration Standard: Goat Metabolism
From: R. Perfetti
To: L. Rossi and E. Saito
Dated: 5/18/93
MRID: 42581401

DP Barcode:	D188220
Subject:	PP#9E3781. Malathion (Cythion 57% EC) in/on Atemoya in Florida. Response to CBTS Review #9894 (Memo of W.T. Chin dated December 7, 1992, DP Barcode D178398, MRID #422684-01). Reevaluation of Analytical and Residue Data.
From:	M. Rodriguez
To:	H. Jamerson
Dated:	5/26/93
MRID:	42268401

DP Barcodes:	D190598 and D191327
Subject:	Response to the Malathion Reregistration Standard: Poultry Metabolism
From:	R. Perfetti
To:	L. Rossi and A. Rathman
Dated:	7/27/93
MRIDs:	42715401 and 42744401

PP#	3H5668
Subject:	Malathion on Dried and Spent Hops. Re-evaluation of Residue Chemistry Data Requirements
From:	R. Perfetti
To:	H. Jamerson
Dated:	2/4/94
MRID:	None

DP Barcode:	D196878
Subject:	Response to the Malathion Reregistration Standard: Radiovalidation of Method in Plants
From:	R. Perfetti
To:	L. Rossi
Dated:	2/28/94
MRID:	42894601

DP Barcode:	D196880
Subject:	Response to the Malathion Reregistration Standard: Confined Rotational Crop Study
From:	R. Perfetti
To:	L. Rossi
Dated:	5/26/94

MRID: 42785501

DP Barcodes: D199259, D203021, and D203620
Subject: Response to the Malathion Reregistration Standard: Magnitude of the Residue Studies
From: R. Perfetti
To: E. Saito
Dated: 9/6/94
MRIDs: 43078702, 43108201, 43078701, and 43175501

DP Barcode: D203171
Subject: Response to the Malathion Reregistration Standard: Magnitude of the Residue Studies
From: R. Perfetti
To: E. Saito
Dated: 10/18/94
MRIDs: 43107601, 43107602, and 43107603

DP Barcode: D210348
Subject: Response to the Malathion Reregistration Standard: Clarification of Magnitude of the Residue Requirements.
From: R. Perfetti
To: E. Saito
Dated: 1/3/95
MRID(s): None

DP Barcodes: D208047, D210189, D210843, and D210294
Subject: Response To the Malathion Reregistration Standard: Magnitude of the Residue Studies. Case No. 0248, Chemical I.D. No. 057701.
From: D. Hrdy
To: L. Schnaubelt/S. Jennings
Dated: 4/27/95
MRID(s): 43360401, 43372701, 43376801, 43372901, 43370601, 43360001, 43368301, 43362501, 43367201, 43361101, 43468201, 43479601, and 43499901

DP Barcode: D215369

Subject:	Response to the Malathion Reregistration Standard: Independent Laboratory Validation of a Malathion Analytical Method for Crop Matrices.
From:	D. Hrdy
To:	L. Schnaubelt/S. Jennings
Dated:	8/29/95
MRID:	43630301

DP Barcode:	D218858
Subject:	Tolerance Method Validation Request For Malathion
From:	D. Hrdy
To:	D. Marlow
Dated:	10/13/95
MRID:	None

DP Barcode:	D213229 and D219313
Subject:	Storage Stability Studies in Various Raw and Processed Commodities
From:	D. Miller
To:	S. Jennings
Dated:	11/7/95
MRIDs:	43549001 and 43684801

Petition No.:	PP#9E3781
DP Barcode:	D226599
Subject:	Referral to FDA for Publication of American Cyanamid Analytical Method M-1788 in the Pesticide Analytical Manual, Volume II (PAM II) as a Lettered Method.
From:	M. Rodriguez
To:	M. Clover, FDA
Dated:	5/29/96
MRID:	43825501

DP Barcodes:	D208772, D208242, D208233, D209529, and D210188
Subject:	Malathion: Magnitude of Residues in/on avocados, beans (dry), blueberries, grapes, grasses, onions (dry bulb), onions (green), rice, spring wheat, winter wheat (OPPTS 860.1500) and an orange processing study (OPPTS 860.1520)
From:	M. Xue
To:	Paula Deschamp
Dated:	1/8/99

MRIDs:	43350401, 43350402, 43362601, 43372601, 43383301, 43383401, 43383501, 43414901, 43417601, 43451701, and 43468101

DP Barcode:	D217170
Subject:	Malathion Reregistration: Residue Chemistry: Magnitude of the Residue in Dates [860.1500 & .1520]...
From:	K Docktor
To:	L. Schnaubelt/ Susan Jennings
Dated:	9/2/97
MRID:	43688701

DP Barcode:	D209827
Subject:	Malathion: Platte Chemical Company's Submission of a Study Pertaining to Magnitude of the Residue in Dates
From:	
To:	[Currently under review]
Dated:	
MRID:	43473601

DP Barcode:	D211260
Subject:	Magnitude of Residue of Malathion and Maloxon in/on Winter Wheat Grain and its Commodities
From:	M. Xue
To:	Diana Locke
Dated:	7/13/98
MRID:	43510501

DP Barcode:	D212115
Subject:	Malathion Reregistration; Magnitude of the Residue in Processed Commodities of Potatoes.
From:	W. Smith
To:	L. Schnaubelt/ Susan Jennings
Dated:	9/30/97
MRID(s):	43524101

DP Barcode:	D213105 and D213929

Subject:	Magnitude of Residues in Alfalfa, Clover and Cottonseed (OPPTS 860.1500); Processing Studies in Grapes, Cottonseed, Rice and field Corn (OPPTS 860.1520)
From:	M. Xue
To:	Diana Locke
Dated:	11/5/98
MRIDs:	43545201, 43546101, 43548401, 43562301, 43577401, 43585301, and 43596601

DP Barcode:	D216397
Subject:	Malathion: Magnitude of Residues of Malathion and Malaoxon in/on Stored Grains and Processed Commodities.
From:	M. Xue
To:	Diana Locke
Dated:	5/26/98
MRIDs:	43661401 and 43666801

DP Barcode:	D223392
Subject:	Malathion Reregistration; Storage Stability Studies in Various Raw and Processed Commodities
From:	W. Smith
To:	L. Schnaubelt/ Susan Jennings
Dated:	9/23/97
MRID:	43910901

DP Barcodes:	D226183 and D226546
Subject:	Malathion: Magnitude of Residues in/on Apple and Flax (OPPTS 860.1500), and their Processed Commodities (OPPTS 860.1520)
From:	M. Xue
To:	Diana Locke
Dated:	12/10/98
MRID:	43991401 and 44009601

DP Barcodes:	D227872, D228271, D228961, D229875, D231358, D233103, D233233, and D234461
Subject:	Malathion: Magnitude of Residues and Processing Studies of Malathion and Malaoxon in/on Several Crops, Submitted by IR-4
From:	M. Xue
To:	Diana Locke
Dated:	9/29/98
MRIDs:	44001101, 44013701, 44016001, 440601201, 44076801, 44094401, 44094801, 44098401, 44120001, 44124801, 44203901, 44205901, 44232601, and 44232701

DP Barcode:	D242507
Subject:	Malathion: Magnitude of Residues of Malathion and Malaoxon in/on Carrots (OPPTS 860.1500).
From:	M. Xue
To:	Diana Locke
Dated:	4/24/98
MRID:	44441601

DP Barcode:	D243536
Subject:	Malathion: Magnitude of Residues of Malathion and Malaoxon in/on Chestnut (OPPTS 860.1500)
From:	M. Xue
To:	Diana Locke
Dated:	6/5/98
MRID:	44478401

DP Barcode:	D236036, D236038 & D236039
Subject:	Malathion: Magnitude of Residue Studies of Malathion and Malaoxon in/on Mustard Greens, Spinach and Turnip (OPPTS 860.1500).
From:	M. Xue
To:	Diana Locke
Dated:	9/229/98
MRIDs:	44271101, 44272401, and 44266401

DP Barcode:	D239267 & D239795
Subject:	Malathion Reregistration; Magnitude of the Residue in Guava, papaya, and walnut; GLN 860.1500; Interregional Research Project No. 4 (IR-4);
From:	W. Smith
To:	W. Waldrop/ D. Lateulere
Dated:	1/27/98
MRIDs:	44391501, 44331001, and 44383301

DP Barcode:	D242509
Subject:	Malathion: Magnitude of Residues of Malathion and Malaoxon in/on Asparagus (OPPTS 860.1500)
From:	M. Xue
To:	Diana Locke
Dated:	4/24/98
MRIDs:	44436101

DP Barcode:	D243538
Subject:	Malathion: Magnitude of Residues of Malathion and Malaoxon in/on Mango (OPPTS 860.1500)
From:	M. Xue
To:	Diana Locke
Dated:	06/05/98
MRID:	44480301

DP Barcode:	D243539
Subject:	Malathion: Magnitude of Residues of Malathion and Malaoxon in/on Passionfruit (OPPTS 860.1500)
From:	M. Xue
To:	Diana Locke
Dated:	6/16/98
MRID:	44472801

DP Barcode:	D248548
Subject:	Malathion Magnitude of the Residue on Pineapple
From:	D. Soderberg
To:	Diana Locke
Dated:	12/4/98
MRIDs:	44613801

MASTER RECORD IDENTIFICATION NUMBERS

References Used To Support Reregistration

00005309 Eschle, J.L.; Miller, J.A. (1967) Ultra-Low-Volume Application of Insecticides to Cattle for Control of the Horn Fly: Report No. 20820. (Unpublished study received Feb 6, 1969 under 11556-16; prepared by U.S. Agricultural Research Service, Entomology Research Div., Livestock Insects Investigations for Chemagro Corp., submitted by Bayvet, Shawnee Mission, Kans.; CDL:007194-G)

00030482 Snetsinger, R.; Chung, S.L.; Kielbasa, R.; et al. (1979) Ethoprop: Sciarid Fly Control in Mushrooms. (Unpublished study including PR No. 908 and published data, received Mar 27, 1980 under 0E2341; prepared in cooperation with Pennsylvania State Univ., Dept. of Entomology, submitted by Interregional Research Project No. 4, New Brunswick, N.J.; CDL:099351-C)

00033810 American Cyanamid Company (1965) Malathion Residues on Tomatoes. (Unpublished study received Aug 26, 1968 under 241-47; CDL: 001672-B)

00034342 McGregor, H.E. (1972) Progress Report: Malathion for Insect Control in Flour Mills. Includes undated method entitled: Determination of Malathion in various mill streams of wheat. (Unpublished study received Feb 15, 1973 under 241-47; prepared by U.S. Agricultural Research Service, Mid-West Grain Insects Investigations, Grain Marketing Research Center in cooperation with General Mills, submitted by American Cyanamid Co., Princeton, N.J.;

00034344 Amen, C.R.; Telford, H.S.; Legault, R.R.; et al. (1959) Monthly Report: Malathion--Residues in Asparagus. (Unpublished study received Nov 3, 1959 under 241-30; prepared in cooperation with State College of Washington, Depts. of Entomology and Agricultural Chemistry, submitted by American Cyanamid Co., Princeton,N.J.; CDL:001635-A)

00034457 Turner, C. (1959) Horn Fly Tests. (Unpublished study received Mar 10, 1959 under 241-33; prepared by Virginia Polytechnic Institute, submitted by American Cyanamid Co., Princeton, N.J.; CDL: 001653-A)

00034458 Dickason, E.A.; Amen, C.R.; Tuft, T.O. (1960) [Control of Insects on Vetch]. (Unpublished study received Oct 10, 1960 under 241-33; prepared in cooperation with Oregon State College and Hazleton Laboratories, Inc., submitted by American Cyanamid Co., Princeton, N.J.; CDL:001654-A)

00034461 Wells, A.L.; Stelmach, Z.; Guyer, G.E.; et al. (19??) A Study of Malathion for Controlling Flies in Dairy Barns and on Dairy Cattle. Michigan Quarterly Bulletin 40(4):786-795. (Also In unpublished submission received Apr 2, 1962 under 241-33; submit-ted by American Cyanamid Co., Princeton, N.J.; CDL:001656-B)

00034951 Phillips, G.L.; Moore, S., III (1970) [Efficacy Data for Malathion on Wheat]. (Unpublished study including letter dated Sep 30, 1970 from J.R. Dogger to E. Brad Fagon, received Feb 10, 1971 under 241-47; prepared by U.S. Agricultural Marketing Service, Marketing Research Div., Stored-Grain Insects Laboratory in cooperation with Univ. of Illinois, Cooperative Extension Service, Illinois Natural History Survey, submitted by American Cyanamid

00035013 Orloski, E.J.; Whalen, R.T.; Owens, W.L., Jr. (1968) Malathion Residues in Grain Sorghum: Report No. C-162. (Unpublished study received Aug 16, 1968 under 241-110; submitted by American Cyanamid Co., Princeton, N.J.; CDL:001998-A)

00035014 American Cyanamid Company (19??) [Extraction of Malathion from Grain Sorghum; Determination of Malathion in Carbon tetrachloride Extracts]. (Unpublished study received Aug 16, 1968 under 241-110; CDL:001998-B)

00035015 Orloski, E.J.; Snyder, E.H.; Roberts, W.W. (1964) Malathion Residues in Blueberries: Report No. C-66. (Unpublished study received Apr 26, 1965 under 241-110; submitted by American Cyanamid Co., Princeton, N.J.; CDL:001994-A)

00035130 American Cyanamid Company (1960) Malathion Recovery Studies on Peanut Products: Project BS 1-32. (Unpublished study received Aug 30, 1960 under 241-47; prepared in cooperation with U.S. Dept. of Agriculture, Stored Product Insects Branch, Savannah Station; CDL:001668-B)

00035314 Kiigemagi, U.; Terriere, L.C. (1968) Malathion Residues on Cherries Treated with an Ultra Low Volume Formulation. (Unpublished study including letter dated Dec 1, 1969 from U. Kiigemagi to C. R. Amen, received Feb 6, 1970 under 241-108; prepared by Oregon State Univ., Dept. of Agricultural Chemistry, submitted by American Cyanamid Co., Princeton, N.J.; CDL:002001-B)

00035318 Orloski, E.J.; Whalen, R.T.; Cowan, C.B.; et al. (1966) Malathion Residues in Cottonseed: Report No. C-103. Includes method dated Jan 18, 1966. (Unpublished study including report no. C-104, received Jan 26, 1966 under 241-110; submitted by American Cyanamid Co., Princeton, N.J.; CDL:001995-B)

00035330 Orloski, E.J.; Devine, J.M.; Pass, B.C.; et al. (1969) Malathion and Methyl parathion Residues in Alfalfa: Report No. C-217. Includes undated method entitled: Gas chromatographic determination of Malathion and Methyl parathion residues in alfalfa (green foliage and dry hay). (Unpublished study received Feb 19, 1970 under 241-219; prepared in cooperation with Syracuse Univ. Research Corp., submitted by American Cyanamid Co.

00035870 Zabik, M. (1970) ULV Malathion Residues on Cherries: Sample Analytical Procedure. Undated method. (Unpublished study received Feb 18, 1971 under 241-224; prepared by Michigan State Univ., Pesticide Analytical Laboratory, submitted by American Cyanamid Co., Princeton, N.J.; CDL:002062-C)

00035886 Orloski, E.J.; Bohn, W.R.; Whalen, R.T.; et al. (1967) Malathion Residues in Green Alfalfa: Report No. C-139. Includes method entitled: Determination of Malathion in Benzene extracts. (Unpublished study received Apr 8, 1968 under 241-110; submitted by American Cyanamid Co., Princeton, N.J.; CDL:001996-B)

00035890 Dorough, H.W.; Randolph, N.M. (1967) Comparative Residual Nature of certain Insecticides Applied as Low Volume Concentrate and Water Emulsion Sprays. Bulletin of Environmental Contamination & Toxicology 2(6):340-342. (Also In unpublished submission received Apr 1, 1969 under 241-219; submitted by American Cyanamid Co., Princeton, N.J.; CDL:002059-F)

00048370 U.S. Department of Agriculture (1973) [Efficacy Studies--Raisins]. (Compilation; unpublished study; CDL:221775-H)

00057674 American Cyanamid Company (1952) Malathon. N.P. (Technical bulletin no. 2; also In unpublished submission received March 15, 1952 under unknown admin. no.; CDL: 001580-A)

00058823 Manuel, A.J. (1976) Malathion: Determination of Residues of Malathion, (CL 6,601), S-[1,2-Bis(ethoxycarbonyl)ethyl]-O,O-dimethyldithiophosphate, and Malaoxon (CL 23,269) in Beef and Pork Muscle, Bread, Cake, Corn Flakes, Milk, Coca-Cola, and Cranberry Sauce by Gas-Liquid Chromatography: Report No. C-919. Includes method M-647 dated Mar 12, 1976. (Unpublished study received Aug 16, 1976 under 241-EX-83; submitted by American Cyanamid

00058824 Alvarez, C.G.; McGaughey, W.H. (1975) Malathion on Milling Fractions of Three Varieties of Rough Rice: Duration of Protection and Residue Degradation, USDA, ARS, Market Quality Research Division, Beaumont, Texas--1969: Report No. 75-123. (Unpublished study including published data, received Aug 16, 1976 under 241-EX-83; prepared in cooperation with U.S. Agricultural Research Service, Market Quality Research Div., Stored-Product

00058825 Alvarez, C.G.; Bliznick, A.; McGregor, H.; et al. (1975) Malathion in Flour Mills, USDA, ARS, Mid-west Grain Insects Investigations, Manhattan, Kansas--1971: Report No. 75-124. Includes undated method entitled: Determination of Malathion in various mill streams of

wheat. (Unpublished study received Aug 16, 1976 under 241-EX-83; prepared in cooperation with U.S. Agricultural Research Service, Market Quality Research Div., Stored-Product

00058826 Alvarez, C.G.; Edmonds, W.O. (1975) Malathion Residues on Milled Fractions of Malathion Treated Wheat, Minneapolis, Minnesota--1958-59: Report No. 75-40. Includes method M 18 dated Feb 1955. (Unpublished study received Aug 16, 1976 under 241-EX-83; prepared in cooperation with U.S. Dept. of Agriculture, Stored Products Insects Section and Pillsbury Mills, Inc., submitted by American Cyanamid Co., Princeton, N.J.; CDL:230458-G)

00058827 Alvarez, C.G.; McGregor, H.E.; Henderson, L.S.; et al. (1975) Residue Studies on Corn and Milled Corn Fractions, USDA, ARS, Midwest Grain Insects Investigations, Manhattan, Kansas--1972: Report No. 75-125. (Unpublished study received Aug 16, 1976 under 241-EX-83; prepared in cooperation with U.S. Agricultural Research Service, Mid-west Grain Insects Investigations Laboratory and Stored Products Laboratory, submitted by American Cyanamid

00058828 Alvarez, C.G.; Schesser, J.H.; Wilson, J.L.; et al. (1975) Persistence of Cythion Residues on Stored Grains: Corn, Wheat and Grain Sorghum: Report No. 75-122. (Compilation by submitter; unpublished study including published data, received Aug 16, 1975 under 241-EX-83; submitted by American Cyanamid Co., Princeton, N.J.; CDL:230458-I)

00080769 ICI Americas, Incorporated (1977) [Efficacy of Pirimiphos-methyl on Peanuts]. (Compilation; unpublished study, including published data, received Dec 1, 1978 under 10182-EX-15; CDL: 097674-H)

00082336 Claborn, H.V. (1956) Insecticide Residues in Meat and Milk: ARS-33-25. (U.S. Agricultural Research Service, Entomology Research Branch; unpublished study; CDL:097556-J)

00085524 California Spray-Chemical Company (1955) Spray Residue Remaining from the Use of Captan as an Agricultural Fungicide. (Compilation; unpublished study received May 1, 1955 under PP0015; CDL: 090983-N)

00088051 Claborn, H.V. (1955) Insecticide Residues in Meat and Milk. (U.S. Agricultural Research Service, Entomology Research Branch; unpublished study; CDL:090081-X)

00089052 American Cyanamid Company (1956) Method of Residue Analysis. (Unpublished study received on unknown date under PP0064; CDL: 090062-A)

00089237 Norris, M.V.; Vail, W.A.; Averell, A.R. (1954) Colorimetric Method for the Determination of Malathion Residues on Fruits, Vegetables, etc. Method dated Jan 1954, including method dated Aug 1954 entitled: Freeze-drying of milk. (Unpublished study received Jun 1, 1955 under PP0019; CDL:090018-AM)

00089239 American Cyanamid Company (1954) [Residue Study of Malathion on Various Fruits]. (Compilation; unpublished study received on unknown date under PP0019; CDL:090018-AO)

00089242 American Cyanamid Company (1954) [Residue Study of Malathion on Blueberries and Various Other Berries]. (Compilation; unpublished study received Jun 1, 1955 under PP0019; CDL:090018-AR)

00089245 American Cyanamid Company (1954) [Residue Study of Malathion on Beans]. (Compilation; unpublished study received Jun 1, 1955 under PP0019; CDL:090018-AV)

00089247 American Cyanamid Company (1954) Malathion Residues: Celery. (Unpublished study received Jun 1, 1955 under PP0019; CDL: 090018-AX)

00089248 American Cyanamid Company (1954) [Residue Study of Malathion on Rutabagas, Onions and Potatoes]. (Compilation; unpublished study received Jun 1, 1955 under PP0019; CDL:090018-AY)

00089249 American Cyanamid Company (1955) [Residue Study of Malathion on Cantaloupes, Cucumbers and Squash]. (Compilation; unpublished study received Jun 1, 1955 under PP0019; CDL:090018-AZ)

00089250 American Cyanamid Company (1954) [Residue Study of Malathion on Eggplants, Peppers and Tomatoes]. (Compilation; unpublished study received Jun 1, 1955 under PP0019; CDL:090018-BA)

00089251 American Cyanamid Company (1952) Malathion Residues: Peas. (Unpublished study received Jun 1, 1955 under PP0019; CDL:090018-BB)

00089252 American Cyanamid Company (1955) [Residue Study of Malathion on Alfalfa and Red Clover]. (Compilation; unpublished study received Jun 1, 1955 under PP0019; CDL:090018-BC)

00089253 American Cyanamid Company (1955) [Residue Study of Malathion on Pasture Grass, Barley, Oats and Wheat]. (Compilation; unpublished study received Jun 1, 1955 under PP0019; CDL:090018-BD)

00089254 American Cyanamid Company (1955) [Residue Study of Malathion on Pineapples and Various Other Fruits]. (Compilation; unpublished study received Jun 1, 1955 under PP0019; CDL:090018-BF)

00089255 American Cyanamid Company (1955) Malathion Residues: Milk. (Unpublished study received Jun 1, 1955 under PP0019; CDL:090018-BG)

00089256 Gjullin; C.M.; Scudder, H.I.; Erwin, W.R. (1955) Determination of Malathion and Its Influence on Flavor of Milk from Cows Fed Malathion-sprayed Alfalfa. (Unpublished study received Jun 1, 1955 under PP0019; prepared by U.S. Dept. of Agriculture, Ento-mology Research Branch and others, submitted by American Cyana-mid Co., New York, N.Y.; CDL:090018-BH)

00089258 American Cyanamid Company (1954) [Residue Study of Malathion on Apples and Pears]. (Compilation; unpublished study received Jun 1, 1955 under PP0019; CDL:090018-BJ)

00089259 American Cyanamid Company (1955) Removal of Malathion Residues on Broccoli in a Commercial Freezing Plant by Washing. (Unpublished study received Jun 1, 1955 under PP0019; CDL:090018-BK)

00089260 American Cyanamid Company (1956) [Residue Study of Malathion on Broccoli and Various Other Vegetables]. (Compilation; unpublished study received Jun 1, 1955 under PP0019; CDL:090018-BL)

00089521 American Cyanamid Company (1963) [Malathion Residues in Forage Crops, Alfalfa, Meat and Dairy Products]. (Compilation; unpublished study, including published data and report nos C-33 and C-34, received Jun 1, 1964 under PP0407; CDL:090023-F)

00089562 American Cyanamid Company (1957) [Residue Study of Malathion in Milk]. (Compilation; unpublished study received Oct 15, 1957 under PP0150; CDL:090002-C)

00089593 American Cyanamid Company (1958) [Analyses for Residues of Malathion in Figs]. (Compilation; unpublished study received Mar 28, 1958 under PP0187; CDL:090215-A)

00089808 American Cyanamid Company (1957) [Residues of Insecticides--Grain]. (Compilation; unpublished study received Apr 10, 1957 under PP0136; CDL:090164-B)

00095763 American Cyanamid Company (1953) [Efficacy of Various Insecticides for Control of Insects on Dates]. (Compilation; unpublished study received Mar 16, 1955 under 241-32; CDL:001650-A)

00096676 Interregional Research Project Number 4 (1982) [Malathion and Malaoxon Residues Found in Sunflower Seeds or Hulls Treated with Malathion]. (Compilation; unpublished study received Mar 17, 1982 under 2E2658; CDL:070717-A)

00098775 Paulin, H.J. (1971) Final Report: Determination of Pesticide Residues in Hog Tissue. (Unpublished study received on unknown date under 3E1367; prepared by TRW, Inc., submitted by American Seed Trade Association, Inc., Kalamazoo, Mich.; CDL:093649-K)

00100020 American Cyanamid Co. (1966) [Malathion Residues on Various Vegetable, Berry and Tobacco Crops]. (Compilation; unpublished study received Jul 19, 1966 under unknown admin. no.; CDL: 124480-A)

00101150 Painter, R.; Kilgore, W.; Ough, C. (19??) Distribution of pesticides in fermentation products obtained from artificially fortified grape musts. [Source unknown] p.342-346. (Also In unpublished submission received Oct 7, 1964 under 100-460; submitted by Ciba-Geigy Corp., Greensboro, NC; CDL;101158-D)

00102291 Walker, R.; Yeomans, A.; Fahey, J.; et al. (1965) Comparative Studies of Ultra Low-volume Sprays and Conventional Emulsion Sprays of Malathion and Methyl Parathion Applied to Cotton for Insect Control. (U.S. Agricultural Research Service, Entomology Research Div., Analytical Investigations, Aerosol Investigations, Biological Investigations and Plant Pest Control Div.;unpublished study; CDL:005066-B)

00102376 Peterson, R.; Pasarela, N. (1969) Malathion and Methyl Parathion Residues in Ground Undelinted Cottonseeds: Report No. C-181. (Unpublished study received Feb 19, 1969 under 241-EX-49; submitted by American Cyanamid Co., Princeton, NJ; CDL:123158-G)

00103342 Kim, D.; Gagne, J. (1982) Pay-Off Flucythrinate (CL 222,705/2.5EC), Cythion Malathion (CL 6,601/ULV): Residues of CL 222,705 and CL 6,601 in Cottonseeds (AER; LA, 1981) (C-0181, C-0261 and C-1593): Report No. C-1993. (Unpublished study received Jun 7, 1982 under 241-110; submitted by American Cyanamid Co., Princeton, NJ; CDL:247650-A)

00103343 Kim, D.; Gagne, J. (1982) Pay-Off Flucythrinate (CL 222,705/2.5EC), Cythion Malathion (CL 6,601/ULV): Residues of CL 222,705 and CL 6,601 in Cottonseeds (AER; GA, 1981) (C-0181, C-0261 and C-1593): Report No. C-2027. (Unpublished study received Jun 7, 1982 under 241-110; submitted by American Cyanamid Co., Prince-ton, NJ; CDL:247650-B)

00104631 IR-4 Project (1975) (Efficacy of Malathion on Almonds and Other Crops). (Compilation; unpublished study received Aug 21, 1978 under 8E2114; CDL:097309-C)

00105387 Storherr, R.; Roberts, J. (1958) Insecticide Residues on Georgia Crops. (Unpublished study received Nov 1, 1970 under unknown admin. no.; prepared by Univ. of Georgia, Experiment Station, submitted by Hercules, Inc., Agricultural Chemicals, Wilmington, DE; CDL:005105-E)

00108941 American Cyanamid Co. (1968) Results of Tests on the Amount of Residues Remaining, Including a Description of the Analytical Methods Used: [Malathion]. (Compilation; unpublished study received on unknown date under 8F0634; CDL:090122-B)

00108942 March, R.; Fukuto, T.; Metcalf, R.; et al. (1956) Fate of P32-labeled malathion in the laying hen, white mouse, and American cockroach. Journal of Economic Entomology 49(2):185-

195. (Also In unpublished submission received Aug 8, 1967 under 8F0634; submitted by American Cyanamid Co., Princeton, NJ; CDL:090122-E)

00108949 American Cyanamid Co. (1957) [Analyses for Residues of Malathion in Black Raspberry Fruit and Other Products]. (Compilation; unpublished study received on unknown date under PP0089; CDL: 090131-A)

00113095 American Cyanamid Co. (1973) [Residues of Malathion in Raisins]. (Compilation; unpublished study received Feb 15, 1974 under 241-208; CDL:026767-A)

00113097 American Cyanamid Co. (1967) [Residues of Malathion in Cottonseed]. (Compilation; unpublished study received Aug 4, 1967 under 241-186; CDL:026906-B)

00113099 American Cyanamid Co. (1973) Residue Data: [Malathion]. (Compilation; unpublished study received May 20, 1974 under 241-110; CDL:026910-B)

00113100 Orloski, E.; Whalen, R. (1964) Malathion Residues in Macadamia Nuts: Report No. C-62. (Unpublished study received Jul 15, 1964 under 241-30; submitted by American Cyanamid Co., Princeton, NJ; CDL:026952-A)

00113101 Orloski, E.; Whalen, R.; Adkins, T.; et al. (1964) Malathion Residues in Milk: Report No. C-51. (Unpublished study received Apr 3, 1964 under 241-30; submitted by American Cyanamid Co., Princeton, NJ; CDL:026954-A)

00113116 American Cyanamid Co. (1954) The Results of Tests on the Amount of Residue Remaining, Including a Description of the Analytical Method used: [Malathion]. (Compilation; unpublished study received Jul 1, 1955 under PP0019; CDL:090774-L)

00113118 Legault, R.; Cone, W. (1968) The Results of Tests on the Amount of Malathion Residue Remaining on Hops, Including a Description of the Analytical Method Used. (Unpublished study received May 4, 1970 under 0E0891; prepared by Washington State Univ., Dept. of Agricultural Chemistry, submitted by Interregional ResearchProject No. 4, New Brunswick, NJ; CDL:091534-A)

00113120 American Cyanamid Co. (1960) The Results of Tests on the Amount of Residues Remaining; A Description of the Analytical Method Used: [Malathion]. (Compilation, unpublished study received Apr 22, 1960 under PP0252; CDL:091560-B)

00113121 American Cyanamid Co. (1969) Results of Tests on the Amount of Residues Remaining, Including a Description of the Analytical Methods Used: [Malathion]. (Compilation; unpublished study received Jul 22, 1970 under 0F0942; CDL:091610-A)

00113134 Dogger, J. (1969) Letter sent to W. Stokes dated Aug 1, 1969: Petition for temporary tolerance for malathion in unprocessed shelled almonds. (U.S. Agricultural Research Service, Market Quality Research Div., Stored-Product Insects Research Branch; unpublished study; CDL:093161-A)

00113135 Interregional Research Project No. 4 (19??) Procedure for Determining Malathion in Hop Cones. (Unpublished study received Sep 29, 1969 under 0E0891; CDL:093188-A)

00113137 Interregional Research Project No. 4 (1978) The Results of Tests on the Amount of Malathion Residues Remaining in or on Flax (Seed, Straw, Meal) Including a Description of the Analytical Method Used. (Compilation; unpublished study received Aug 16, 1979 under 9E2248; CDL:098913-A)

00113141 American Cyanamid Co. (1960) Malathion Recovery Studies on Peanut Products: Exp. No. 9. (Unpublished study received Oct 6, 1960 under PP0275; CDL:092554-B)

00113142 Spitler, G. (1966) Evaluation of Malathion as an Insect Protectant for Inshell Almonds Stored under Commercial Conditions in Chico, Calif. (U.S. Agricultural Research Service, Market Quality Research Div.; unpublished study; CDL:092829-A)

00113143 Interregional Research Project No. 4 (1976) (Determination of Malathion and Malaoxon Residues in Various Crops). (Compilation; unpublished study received Oct 27, 1976 under 7E1881; CDL: 097770-A)

00113147 Higham, J.; Dunn, J.; Blalock, J.; et al. (1974) Cythion ULV: Cythion ..., DEF ..., and Folex ... Residues in Cottonseed Treated with Cythion-DEF and Cythion-Folex Tank Mixtures (South Carolina, Tennessee, and Texas): C-467. (Unpublished study re-ceived Jul 18, 1974 under 241-208; prepared in cooperation withState Univ.--Oswego, Lake Ontario Environmental Laboratory andMobil Chemical Co., submitted by American Cyanamid Co.,

00113149 American Cyanamid Co. (1965) [Determination of Residues of Malathion in Lettuce]. (Compilation; unpublished study received Dec 8, 1965 under 241-30; CDL:101275-A)

00113150 American Cyanamid Co. (1965) Malathion Residues on Tomatoes. (Unpublished study received Aug 26, 1968 under 241-47; CDL: 101276-A)

00113165 Marucci, P. (1960) Letter sent to H. Scott dated Oct 10, 1960 [Request for 0-day label for use of malathion on blueberries]. (Unpublished study received Oct 25, 1960 under unknown admin. no.; prepared by Rutgers Univ., Agricultural Experiment Station, Dept. of Horticulture, Cranberry and Blueberry Research Laboratory, submitted by American Cyanamid Co., Princeton, NJ; CDL: 119963-A)

00113166 Kiigemagi, U.; Crowell, H. (19??) Determination of Malathion on Green Beans. (Unpublished study received Apr 4, 1957 under unknown admin. no.; prepared by Oregon State College, Ag Chem Dept., and Entomology Dept., submitted by American Cyanamid Co.,Princeton, NJ; CDL:119976-A)

00113170 American Cyanamid Co. (1964) [Determination of Malathion Residues in Blueberries]. (Compilation; unpublished study received Feb 27, 1964 under unknown admin. no.; CDL:119980-A)

00113171 American Cyanamid Co. (1965) [Malation Residues in Lettuce]. (Compilation; unpublished study received Dec 8, 1965 under unknown admin. no.; CDL:119981-A)

00113173 Mitchell, M.; Russell; Cleveland, R.; et al. (1971) Cygard 630: Malathion, Methyl Parathion and Methyl Paraoxon Residues in Undelinted Cottonseed: Report No. C-261. (Unpublished study received Mar 8, 1971 under unknown admin. no.; prepared in cooper-ation with Syracuse Univ. Research Corp., submitted by AmericanCyanamid Co., Princeton, NJ; CDL:120007-A)

00113175 American Cyanamid Co. (1959) Malathion Residues on Beef and Diary Cattle. (Compilation; unpublished study received Feb 20, 1959 under unknown admin. no.; CDL:120011-A)

00113176 American Cyanamid Co. (1961) Malathion on Blueberries. (Unpublished study received May 21, 1962 under unknown admin. no.; CDL:120035-A)

00113182 Ohinata, K.; Seo, S.; Steiner, L. (1958) Data on Residues of Malathion on Several Different Fruits and Vegetables. (U.S. Agricultural Research Service, Entomology Research Div.; unpublished study; CDL:124454-A)

00113186 Getz, M.; Skinner, F.; Beroza, M. (1966) Report of Residue Analysis: [Malathion]: Report No. PCB-66-12. (U.S. Agricultural Research Service, Entomology Research Div., Pesticide Chemicals Research Branch; unpublished study; CDL:124468-A)

00113188 Maitlen, J.; McDonough, L.; Esvelt, S. (1966) Report of Residue Analysis: [Malathion]: Report No. PCY-66-1. (U.S. Agricultural Research Service, Entomology Research Div., Pesticide Chemicals Research Branch; unpublished study; CDL:124471-A)

00113191 Pasarela, N.; Brown, R.; Shaffer, C. (1962) Feeding of malathion to cattle: Residue analyses of milk and tissue. Agricultural and Food Chemistry 10(1):7-9. (Also In unpublished submission received Feb 19, 1962 under unknown admin. no.; submitted by American Cyanamid Co., Princeton, NJ; CDL:124485-A)

00113193 American Cyanamid Co. (1963) [Residues of Malathion in Blueberries]. (Compilation; unpublished study received Mar 18, 1964 under unknown admin. no.; CDL:124588-A)

00113203 Anon. (1962) Methods for Determining the Amounts of Malathion in Bagged Citrus Pulp: The Amounts There of and Removal. (Compilation; unpublished study received on unknown date under unknown admin. no.; submitted by ?; CDL:221558-B)

00113205 Anon. (1963) A Description of the Practicable Methods to Determine the Amount of Malathion in or on Grapes (Raisins). (Compilation; unpublished study received Jan 10, 1964 under 4H1331; submitted by ?; CDL:221595-B)

00113206 American Cyanamid Co. (1969) [Study: Malathion Residue on Raisins]. (Compilation; unpublished study received Sep 15, 1971 under 2H2669; CDL:221731-A)

00113212 American Cyanamid Co. (1951) Determination of Residues of Insecticide #4049 on Fruits, Vegetables, etc. (Compilation; unpublished study received on unknown date under unknown admin. no.; CDL:222410-C)

00113214 American Cyanamid Co. (1952) Malathon Residues--Tomato. (Unpublished study received Nov 19, 1952 under unknown admin. no.; CDL:222470-A)

00113223 American Cyanamid Co. (1957) [Residues of Malathion in Blueberries]. (Compilation; unpublished study received Oct 25, 1960 under unknown admin. no.; CDL:222490-A)

00113229 American Cyanamid Co. (1963) [Residues of Malathion in Blueberries and Other Crops]. (Compilation; unpublished study received May 24, 1963 under unknown admin. no.; CDL:223807-A)

00113230 American Cyanamid Co. (1962) [Residues of Malathion in Safflower and Other Crops]. (Compilation; unpublished study received Jul 13, 1962 under 241-30; CDL:223808-A)

00113234 Raun, E. (1956) Chicken louse and mite control with malathion formulations. [Source unknown] (Oct):628-629. (Also In unpublished submission received Jul 13, 1978 under 3770-277; submitted by Economy Products, Omaha, NE; CDL:234368-E)

00113236 Harding, W.; Quigley, G. (1956) Litter treatment with malathion to control the chicken body louse. Journal of Economic Entomology 49(6):806-807. (Also In unpublished submission received Jul 13, 1978 under 3770-277; submitted by Economy Products,Omaha, NE; CDL:234368-H)

00115967 Office of Commissioner (1968) [Study: Pesticide Residues in Selected Crops]. (Compilation; unpublished study received Feb 21, 1969 under 7E0598; CDL:090766-A)

00115976 Office of Commissioner (1968) [Study: Pesticide Residues in Selected Crops]. (Compilation; unpublished study received Feb 21, 1969 under 7E0598; CDL:090766-A)

00116023 Interregional Research Project No. 4 (1967) The Results of Tests on the Amount of DDT Residue Remaining on Chestnuts and Walnuts Including a Description of the Analytical Method Used. (Compilation; unpublished study received on unknown date under1E1097; CDL:090857-A)

00120105 American Cyanamid Co. (1956) The Results of Tests on the Amount of Residues Remaining, Including a Description of the Analytical Method Used: [Malathion]. (Compilation; unpublished study received Jul 22, 1966 under PP0089; CDL:090680-K)

00122714 American Cyanamid Co. (1981) Residue Reports: [Malathion]. (Compilation; unpublished study received Dec 17, 1982 under 241-110; CDL:071295-A)

00138431 U.S. Dept. of Agriculture, European Corn Borer Research Laboratory (1956) Corn--Malathion Residues. (Extract; unpublished study; CDL:124484-A)

00145201 American Cyanamid Co. (1984) Residue Studies PAY-OFF Insecticide on Soybeans. Unpublished compilation. 22 p.

00153985 Coffin, D. (1966) Oxidative metabolism and persistence of parathion and malathion on field-sprayed lettuce. Journal of the A.O.A.C. 49(5):1018-1021.

00153987 Dorough, H.; Randolph, N. (1967) Comparative residual nature of certain insecticides applied as low volume concentrate and water emulsion sprays. Bulletin of Environmental Contamination & Toxicology 2(6):340-348.

00159270 Anon. (19??) Residues of Malathion from Sprays and Dusts on Vegetables and Berries. Unpublished study. 1 p.

00163283 Cook, G.; Moore, J. (1976) Determination of malathion, malaoxon, and monoand dicarboxylic acids of malathion in fish, oyster, and shrimp tissue. J. Agric. Food Chem. 24(3):631-634.

05006630 Oehler, D.D.; Eschle, J.L.; Miller, J.A.; Claborn, H.V.; Ivey, M.C. (1969) Residues in milk resulting from ultra-low-volume sprays of malathion, methoxychlor, coumaphos, ronnel, or Gardona for control of the horn fly. Journal of EconomicEntomology 62(6):1481-1483.

40397101 Watts, R.; Storherr, R. (1967) Sweep co-distillation cleanup of milk for determination of organophosphate and chlorinated hydrocarbon pesticides. J. of the A.O.A.C. 50(3):581-585.

40397102 Rowlands, D. (1964) The degradation of Malathion on stored maize and wheat grains. J. of the Science of Food and Agriculture 15 (12):824-829.

40397103 Anderegg, B.; Madisen, L. (1983) Effect of insecticide distribution and storage time on the degradation of Carbon 14 Malathion in stored wheat. J. of Economic Entomology 76(5):1009-1013.

40397104 Norris, M.; Kuchar, E. (1959) Colorimetric estimation of Malathion residues in cottonseed. Agricultural and Food Chemistry 7 (July):488-489.

40397105 Norris, M.; Easter, E.; Fuller, L.; et al. (1958) Colorimetric estimation of Malathion residues in animal products. J. of Agricultural and Food Chemistry 6(2):111-114.
40415701 O'Brien, R.; Dauterman, W. (1961) The metabolism of orally administered malathion by a lactating cow. Journal of Agr. and Food Chemistry 9(1): 39-42.

42317401 Wootton, M. (1992) Metabolic Fate and Distribution of [Carbon 14] Malathion in Alfalfa: Lab Project Number: 420: 1412. Unpublished study prepared by PTRL East, Inc. 221 p.

42482601 Wootton, M.; Johnson, T. (1992) Metabolic Fate and Distribution of (carbon-14) Malathion: Lab Project Number: 421: 1442. Unpublished study prepared by PTRL East, Inc. 250 p.

42538901 Wootton, M.; Johnson, T. (1992) Metabolic Fate and Distribution of [carbon 14]-Malathion in Lettuce: Lab Project Number: 517: 1482. Unpublished study prepared by PTRL East, Inc. 148 p.

42581401 Cannon, J.; Murrill, E.; Reddy, V. (1992) Meat and Milk Metabolism Study with (carbon 14)-Malathion in Dairy Goats: Final Report: Lab Project Number: 89 GM 4: 9660-F. Unpublished study prepared by Bio-Life Associates, Ltd. and Midwest Research Institute. 335 p.

42583401 Wootton, M.; Johnson, T. (1992) Metabolic Fate and Distribution of (carbon 14)-Malathion in Cotton: Lab Project Number: 419: 1379. Unpublished study prepared by PTRL East, Inc. 185 p.

42715401 Cannon, J.; Murrill, E.; Reddy, V. (1993) Meat and Egg Metabolism Study with (carbon 14)-Malathion in White Leghorn Chickens: Lab Project Number: 89 EM 12: 9660-F: F/R9660.CH. Unpublished study prepared by Bio-Life Associates, Ltd. and Midwest Research Institute. 284 p.

42744401 Cannon, J.; Murrill, E. (1993) Supplemental Report Meat and Egg Metabolism Study with (carbon 14) Malathion in White Leghorn Chickens: Final Supplemental Report: Lab Project Number: 9660-F. Unpublished study prepared by Midwest Research Institute. 29 p.

42785501 Wootton, M.; Johnson, T. (1993) A Confined Rotational Crop Study with (carbon 14)-Malathion Using Turnips (Brassica Rapa), Lettuce (Lactuca sativa) and Wheat (Triticum aestivum): Lab Project Number: 422: 1506. Unpublished study prepared by PTRL East, Inc. and Pharmacology Toxicology Research Lab. 176 p.

42894601 Barker, W.; Prohonic, K. (1993) Accountability Study of the Proposed Method for the Determination of Malathion (0,0-Dimethyl Phosphorodithioate of Diethyl Mercaptosuccinate) and its Metabolite, Malaoxon, in/on Alfalfa Hay Treated with (Carbon 14)-Radiolabeled Malathion: Final Report: Lab ProjectNumber: 92-0106. Unpublished study prepared by EN-CASAnalytical Lab. 98 p.

43078701 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Oranges Harvested After Ground and Aerial Treatment: Lab Project Number: AA920117: 92-0058. Unpublished study prepared by American Agricultural Services, Inc. and EN-CAS Environmental Labs, Inc. 897 p.

43078702 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Sweet Cherries Harvested After Ground and Aerial Treatment: Lab Project Number: AA920128: 92-0040. Unpublished study prepared by American AgriculturalServices, Inc. and EN-CAS Environmental Labs, Inc. 596 p.

43107601 Schwab, D.; Lochhaas, C. (1993) Magnitude of Malathion 25WP Residue in Apples: Final Report: Lab Project Number: 40195. Unpublished study prepared by ABC Laboratories, Inc. 84 p.

43107602 Schwab, D.; Lochhaas, C. (1993) Magnitude of Malathion 5-E Residue in Melons: Final Report: Lab Project Number: 40191. Unpublished study prepared by ABC Laboratories, Inc. 101 p.

43107603 Schwab, D.; Lochhaas, C. (1993) Magnitude of Malathion 5-E Residue in Apples: Final Report: Lab Project Number: 40190. Unpublished study prepared by ABC Laboratory. 106 p.

43108201 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Tart Cherries Harvested after Ground and Aerial Treatment: Lab Project Number: AA920106: 92-053. Unpublished study prepared by EN-CAS Analytical Labs, Inc. 611 p.

43175501 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Bell Peppers Harvested after Ground Treatment: Lab Project Number: AA920118: 92-0032: 92-0038. Unpublished study prepared by American Agricultural Serv., Inc.; EN-CAS Analytical Labs., Inc.; andPan-Agricultural Labs, Inc. 626 p.

43350401 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Bulb Onions Harvested After Ground Treatment: Lab Project Number: AA920115: 92-0043. Unpublished study prepared by American Agricultural Services, Inc. and EN-CAS Analytical Labs, Inc. 524 p.

43350402 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Winter Wheat Raw Agricultural Commodities Harvested After Ground and Aerial Treatment: Lab Project Number: AA920127: 92-0053. Unpublished study prepared by American Agricultural Services, Inc. and EN-CAS Analytical Labs, Inc. 1145 p.

43360001 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Sorghum Grain Harvested After Ground and Aerial Treatment: Lab Project Number: AA920121: 92-0032. Unpublished study prepared by American Agricultural Services, Inc. and EN-CAS Analytical Labs. 467 p.

43360401 Bookbinder, M. (1994) Magnitude of the Residues of Malathion and its Metabolite Malaoxon in/on Potatoes Harvested after Ground Treatment: Lab Project Number: AA920119: 92-0050. Unpublished study prepared by American Agriculture Services, Inc. and EN-CAS Analytical Labs. 671 p.

43361101 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Sweet Corn Raw Agricultural Commodities Harvested After Ground and Aerial Treatment: Lab Project Number: AA920109: 92-0052. Unpublished study prepared by American Agricultural Services, Inc. and EN-CAS AnalyticalLabs. 1336 p.

43362501 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Head Lettuce Harvested After Ground Treatment: Lab Project Number: AA920126: 92-0048. Unpublished study prepared by American Agricultural Services, Inc. and EN-CAS Analytical Labs. 371 p.

43362601 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Grass Raw Agricultural Commodities Harvested After Ground and Aerial Treatment: Lab Project Number: AA920113: 92-0058. Unpublished study preparedby American Agricultural Services, Inc. and EN-CAS AnalyticalLabs. 648 p.

43367201 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and Its Metabolite Malaoxon in/on Leaf Lettuce Harvested after Ground Treatment: Lab Project Number: AA920114: 92/0050. Unpublished study prepared by EN-CAS Analytical Laboratories. 554 p.

43368301 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and Its Metabolite Malaoxon in/on Strawberries Harvested after Ground Treatment: Lab Project Number: AA920122: 92/0059. Unpublished study prepared by EN-CAS Analytical Laboratories. 521 p.

43370601 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Cucumbers Harvested after Ground Treatment: Lab Project Number: AA920111: 92/0045. Unpublished study prepared by En-Cas Analytical Lab., American Agricultural Services, Inc. 663 p.

43372601 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and Its Metabolite Malaoxon in/on Blueberries Harvested after Ground and Aerial Treatment: Lab Project Number: AA920105: 92/0032. Unpublished study prepared by EN-CAS Analytical Laboratories and American Agricultural Services, Inc. 776 p.

43372701 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and Its Metabolite Malaoxon in/on Lima Beans Harvested after Aerial Treatment: Lab Project Number: AA920125: 92/0037. Unpublished study prepared by EN-CAS Analytical Laboratories and American Agricultural Services, Inc. 451 p.

43372901 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and Its Metabolite Malaoxon in/on Tomatoes Harvested after Ground Treatment: Lab Project Number: AA920123: 92/0042. Unpublished study prepared by EN-CAS Analytical Laboratories, Inc. and American Agricultural Servicies, Inc. 932 p.

43376801 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Snap Beans Harvested After Aerial Treatment: Lab Project Number: AA920103: 92-0035. Unpublished study prepared by American Agricultural Services, Inc. and EN-CAS Analytical Labs. 475 p.

43383301 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Green Onions Harvested After Ground Treatment: Lab Project Number: AA920116: 92-0035. Unpublished study prepared by American Agricultural Services, Inc. and EN-CAS Analytical Labs. 568 p.

43383401 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Grapes Harvested After Ground Treatment: Lab Project Number: AA920112: 92-0047. Unpublished study prepared by American Agricultural Services, Inc. and EN-CAS Analytical Labs. 495 p.

43383501 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Avocados Harvested After Ground Treatment: Lab Project Number: AA920102: 92-0057. Unpublished EN-CAS Analytical Labs. 306 p.

43414901 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Spring Wheat Raw Agricultural Commodities Harvested After Ground and Aerial Treatment: Lab Project Number: AA920124: 92-0060. Unpublished study preparedby American Agricultural Services, Inc. and En-Cas AnalyticalLabs. 826 p.

43417601 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Dry Bean Seeds Harvested After Aerial Treatment: Lab Project Number: AA920104: 92-0034. Unpublished study prepared by American Agricultural Services and EN-CAS Analytical Labs. 714 p.

43451701 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and Its Metabolite Malaoxon in Orange Processed Commodities: Lab Project Number: AA920129: 92-0074. Unpublished study prepared by American Agricultural Services, Inc.; EN-CAS Analytical Labs; and The National Food Laboratory, Inc. 467 p.

43468101 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and Its Metabolite Malaoxon in/on Rice Raw Agricultural Commodities Harvested After Ground and Aerial Treatment: Amended Report: Lab Project Numbers: AA920120: 92-0039. Unpublished study prepared by American Agricultural Services, Inc. and EN-CAS Analytical Labs. 706 p.

43468201 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and Its Metabolite Malaoxon in/on Field Corn Raw Agricultural Commodities Harvested After Ground and Aerial Treatment: Lab Project Numbers: AA920108: 92-0046: AA920108.IA. Unpublished study prepared by American Agricultural Services, Inc.; and EN-CAS Anlaytical Labs. 1778 p.

43473601 Bookbinder, M. (1994) Magnitude of the Residue of Malathion in/on Dates Harvested After Dusting Treatments: Final Report: Lab Project Number: 93-0048: AA920134. Unpublished study prepared by American Agricultural Services, Inc. and EN-CAS Analytical Labs. 274 p.

43499901 Bookbinder, M. (1994) Magnitude of the Residue of Malathion and Its Metabolite Malaoxon in/on Tomato Processed Commodities: Lab Project Number: AA920135: 92-0079. Unpublished study prepared by American Agricultural Services, Inc.; The National Food Lab, Inc.; and EN-CAS Analytical Labs. 370 p.

43510501 Bookbinder, M. (1995) Magnitude of the Residue of Malathion and Its Metabolite Malaoxon in/on Winter Wheat Processed Commodities: Lab Project Number: 92-0080: AA920136: EL6110. Unpublished study prepared by American Agricultural Services,Inc.; EN-CAS Analytical Labs; and Texas A&M University. 425 p.

43524101 Bookbinder, M. (1995) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Potato Processed Commodities: Lab Project Number: AA920138: 92/0075. Unpublished study prepared by American Agricultural Services, Inc., Wm. J. Englar & Associates, Inc., and EN-CAS Analytical Laboratories. 373 p.

43545201 Bookbinder, M. (1995) Magnitude of the Residue of Malathion and its Metabolite Maloxon in/on Clover Raw Agricultural Commodities Harvested after Ground and Aerial Treatment: Lab Project Number: AA920107: 94-0044. Unpublished study prepared by American Agricultural Services, Inc. and EN-CAS Analytical Labs. 1274 p.

43546101 Bookbinder, M. (1995) Magnitude of the Residue of Malathion and Its Metabolite Malaoxon in/on Alfalfa Raw Agricultural Commodities Harvested after Ground and Aerial Treatment: Lab Project Number: AA920101: 92-0031: AA920101.CA1. Unpublished study prepared by American Agricultural Services, Inc. and EN-CAS Analytical Labs. 2252 p.

43548401 Bookbinder, M. (1995) Magnitude of the Residue of Malathion and Its Metabolite Malaoxon in/on Grape Processed Commodities: Lab Project Number: 92-0073: AA920133: AA920133.CA1. Unpublished study prepared by American Agricultural Services,Inc.; The National Food Lab, Inc.; and EN-CAS Analytical Labs.405 p.

43549001 Clayton, B. (1995) Stability of Malathion and Malaoxon in Various Raw Agricultural Crop Commodities During Six Months of Frozen Storage: (Final Report): Lab Project Number: 93-0038A. Unpublished study prepared by EN-CAS Analytical Labs. 376 p.

43562301 Bookbinder, M. (1995) Magnitude of the Residue of Malathion and Its Metabolite Malaoxon in/on Rice Processed Commodities: Lab Project Numbers: AA920137: 92-0077: AA920137.LA1. Unpublished study prepared by American Agricultural Services, Inc.; Texas A&M University; and EN-CAS Analytical Labs. 416 p.

43577401 Bookbinder, M. (1995) Magnitude of the Residue of Malathion and its Metabolite Malaoxon in/on Field Corn Processed Commodities: Lab Project Number: AA920132: 92-0072: AA920132.TX1. Unpublished study prepared by American Agricultural Service, Inc.; Texas A&M University; and EN-CAS Analytical Labs. 544 p.

43585301 Bookbinder, R. (1995) Magnitude of the Residue of Malathion and Its Metabolite Malaoxon in/on Cottonseed Processed Commodities: Lab Project Number: AA920131: 92-0071: AA920131.MS1. Unpublished study prepared by American Agricultural Services, Inc.; EN-CAS Analytical Labs; and Texas A&M University. 555 p.

43596601 Bookbinder, M. (1995) Magnitude of the Residue of Malathion and Its Metabolite Malaoxon in/on Cottonseed Harvested after Ground and Aerial Treatment: Lab Project Number: 92-0033: AA920110: AA920110.AZ1. Unpublished study prepared by American Agricultural Services, Inc. and EN-CAS Anaytical Labs.3327 p.

43630301 Humble, G.; Herzig, R. (1995) Independent Laboratory Validation of the Pesticide Analytical Method for Malathion and Malaoxon: Final Report: Lab Project Number: RES9533: ENC-22/94: AA/920117. Unpublished study prepared by AGVISE Labs, Inc. 376 p.

43661401 Rice, F.; Williams, B. (1995) Magnitude of the Malathion and Malaoxon Residues in or on Stored Wheat Grain and Aspirated Grain Fractions: Lab Project Numbers: 41701: FS-41701.SG: ABC 41701. Unpublished study prepared by ABC Labs., Inc. 521 p.

43666801 Rice, F. (1995) Magnitude of the Malathion and Malaoxon Residues in or on Stored Corn Grain and Processed Commodities: Final Report: Lab Project Number: 41702: FS-41702. Unpublished study prepared by ABC Labs Inc. 752 p.

43684801 Clayton, B. (1995) Stability of Malathion and Malaoxon in Various Processed Commodities During Six Months of Frozen Storage: Lab Project Number: 93-0038B. Unpublished study prepared by EN-CAS Analytical Labs. 440 p.

43688701 Berens, R. (1995) Determination of the Magnitude of Residues of Malathion and Malathion Oxygen Analog in Dates from Trees Treated with Malathion 5 Dust: Lab Project Number: GOWAN 95-01. Unpublished study prepared by Pacific Analytical. 147 p.

43910901 Clayton, B. (1996) Stability of Malathion and Malaoxon in Various Raw Agricultural and Processed Commodities During Twelve Months of Frozen Storage: Lab Project Number: 93-0038C. Unpublished study prepared by EN-CAS Analytical Labs. 324 p.

43991401 Samoil, K. (1996) Magnitude of Residue: Malathion on Flax: Lab Project Number: 04795: 04795.94-ND02: 4795.94-NDR03. Unpublished study prepared by North Dakota State University, Pesticide Analytical Lab and Dept. of Entomology. 346 p.

44001101 Samoil, K. (1996) Magnitude of Residue: Malathion on Mushroom: Lab Project Number: PR 4816: 04816: PR 04816. Unpublished study prepared by Interregional Research Project No. 4. 298 p.

44009601 Samoil, K. (1996) Magnitude of Residue: Malathion on Apple: Lab Project Number: 04768: 04768.94-CA77: 04827.94-CA79. Unpublished study prepared by Interregional Research Project No. 4. 856 p.

44013701 Samoil, K. (1996) Magnitude of Residue: Malathion on Pear: (Final Report): Lab Project Number: 04827: 04827.94-CAR29: 04827.94-CA79. Unpublished study prepared by Interregional Research Project No. 4. 447 p.

44016001 Samoil, K. (1996) Magnitude of Residue: Malathion on Peach: Lab Project Number: PR 04826: 04826.90-GA20: 04826.92-MI11. Unpublished study prepared by Interregional Research Project No. 4. 256 p.

44061201 Samoil, K. (1996) Magnitude of Residue: Malathion on Fig: Lab Project Number: 4793: 04793: 4793.92-CA 118. Unpublished study prepared by IR-4. 122 p.

44076801 Samoil, K. (1996) Magnitude of Residue: Malathion on Macadamia: (Final Report): Lab Project Number: 04812: PR04812: 92-HI04. Unpublished study prepared by University of Hawaii at Manoa. 287 p.

44094401 Samoil, K. (1996) Magnitude of Residue: Malathion on Strawberry: (Final Report): Lab Project Number: 05152: 5152.92-CAR02: M-1788. Unpublished study prepared by New Jersey Agricultural Experiment Station. 92 p.

44094801 Samoil, K. (1996) Magnitude of Residue: Malathion on Watercress: (Final Report): Lab Project Number: 04852: PR#04852: 92-FL82. Unpublished study prepared by University of Hawaii at Manoa. 351 p.

44098401 Samoil, K. (1996) Magnitude of Residue: Malathion on Melon: (Final Report): Lab Project Number: 04815: 4853.92-GA11: 92-TIR08. Unpublished study prepared by New Jersey Agricultural Experiment Station. 276 p.

44120001 Samoil, K. (1996) Magnitude of Residue: Malathion on Apricot: Lab Project Number: PR 04769: 04769.93-CA48: 04769.93-CAR16. Unpublished study prepared by Interregional Research Project No. 4. 144 p.

44124801 Samoil, K. (1996) Magnitude of Residue: Malathion on Mint: Lab Project Number: PR 04829: 4829.93-WI19: 4829.93-CAR09. Unpublished study prepared by Interregional Research Project No. 4. 523 p.

44203901 Samoil, K. (1997) Magnitude of Residue: Malathion on Broccoli: (Final Report): Lab Project Number: 04776: PR 04776: 4776.92-WA28. Unpublished study prepared by Interregional Research Project No. 4. 408 p.

44205901 Samoil, K. (1997) Magnitude of Residue: Malathion on Pea (Succulent): Lab Project Number: 04823: 92-WI03: 92-CA22. Unpublished study prepared by USDA-ARS and University of Wisconsin. 320 p.

44232601 Samoil, K. (1996) Magnitude of Residue: Malathion on Cabbage: (Final Report): Lab Project Number: 04778: 91-FL48: 92-NY21. Unpublished study prepared by University of Florida. 660 p.

44232701 Samoil, K. (1997) Magnitude of Residue: Malathion on Okra: Lab Project Number: 04820: 4820.92-TX15: 4820.94-SC10. Unpublished study prepared by Interregional Research Project No. 4. 300 p.

44266401 Samoil, K. (1997) Magnitude of Residue: Malathion on Turnip: Lab Project Number: 04847: 4847.92-WA27: 4847.92-OH18. Unpublished study prepared by Interregional Research Project No. 4. 707 p.

44271101 Samoil, K. (1997) Magnitude of Residue: Malathion on Mustard Greens: Lab Project Number: 04817: 4817.92-AZ02: 4817.92-CA*16: 4817.92-GA*12: 4817.92-IN02: 4817.92-NC01: 4817.92-SC*05: 4817.92-TX*17: 4817.92-WA*05. Unpublished study prepared by Interregional Research Project No. 4. 459 p.

44272001 Samoil, K. (1996) Magnitude of Residue: Malathion on Orange: Lab Project Number: 05142: PR 05142: 5142.94-FL25. Unpublished study prepared by Interregional Research Project No. 4. 215 p.

44272401 Samoil, K. (1997) Magnitude of Residue: Malathion on Spinach: Lab Project Number: 04842: 4842.92-NJ02: 4842.92-WA*02: 4842.93-CA*14: 4842.93-TX01. Unpublished study prepared by Interregional Research Project No. 4. 590 p.

44282101 Samoil, K. (1997) Magnitude of Residue: Malathion on Raspberry: (Amended Draft Report): Lab Project Number: 4835.92-WA39: 4835.92-WA40: 04835. Unpublished study prepared by USDA-ARS and Washington State University. 123 p. {OPPTS 860.1500}

44282201 Samoil, K. (1997) Magnitude of Residue: Malathion on Blackberry: (Amended Draft Report): Lab Project Number: 04774: 4774.92-OR14: 4774.92-OR18. Unpublished study prepared by USDA-ARS; University of California; and Oregon State University. 148 p. {OPPTS 860.1500}

44331001 Samoil, K. (1997) Magnitude of Residue: Malathion on Papaya: Lab Project Number: 03727: 3727.93-HI02: 3727.93-FL07. Unpublished study prepared by Interregional Research Project No. 4. 562 p.

44381101 Samoil, K. (1997) Magnitude of Residue: Malathion on Walnut: Lab Project Number: 04851:04851.92-CAR07: 04851.95-CA71: 04851.95-CAR25. Unpublished study prepared by Interregional Research Project No. 4. 303 p.

44391501 Samoil, K. (1997) Magnitude of Residue: Malathion on Guava: Lab Project Number: 04799:04799.93-FL21: 04799.93-HI01: 04799.93-FL06: 04799.93-CAR10. Unpublished study prepared by Interregional Research Project No. 4. 495 p.

44436101 Samoil, K. (1997) Magnitude of Residue: Malathion on Asparagus: IR-4 Project Number: 04770: New Jersey Agricultural Experiment Station Publication No. A-27200-56-97. Unpublished study prepared by Interregional Research Project No. 4. 767 p.

44441601 Samoil, K. (1997) Magnitude of Residue: Malathion on Carrot: IR-4 Project Number: 04779: New Jersey Agricultural Experiment Station Publication No. A-27200-58-97. Unpublished study prepared by Interregional Research Project No. 4. 699 p.

44472801 Samoil, K. (1998) Magnitude of Residue: Malathion on Passionfruit: IR-4 Project Number: A3726: New Jersey Agricultural Experiment Station Publication No. A-27200-1-98. Unpublished study prepared by Interregional Research Project No. 4. 365 p.

44478401 Samoil, K. (1998) Magnitude of Residue: Malathion on Chestnut: IR-4 Project Number: A4783: New Jersey Agricultural Experiment Station Publication No. A-27200-3-98. Unpublished study prepared by Interregional Research Project No. 4. 167 p.

44480301 Samoil, K. (1998) Magnitude of Residue: Malathion on Mango: IR-4 Project Number: B4814: New Jersey Agricultural Experiment Station Publication No. A-27200-4-98. Unpublished study prepared by Interregional Research Project No. 4. 367 p.

44613801 Samoil, K. (1998) Magnitude of Residue: Malathion on Pineapple: IR-4 Project Number: 04830: New Jersey Agricultural Experiment Station Publication No. A-27200-20-98. Unpublished study prepared by Interregional Research Project No. 4. 511 p.